sub**URBAN**

redesigning urban residential

Steven Bugge
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Graduate Design Thesis
Professor Bakr Aly Ahmed

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A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By

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In Partial Fulfillment of the Requirements
for the Degree of
Master of Architecture

Primary Thesis Advisor

Thesis Committee Chair

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Abstract

Suburbia is being called home to an increasing number of people living in Western societies. In the United States, more people live in the suburbs than the cities they surround, and 75% of all new construction is taking place in the suburbs yet only 5% of these building are designed by architects(“The challenge of Suburbia,” 2004). The effects of suburbia’s stretch across the land has had a drastic affect on American society. Culturally, physically, and psychologically, the American people have developed a way of life that has become detrimental to themselves and their environment. Urban sprawl, also known as sprawl or suburban sprawl, has been correlated with increased energy use, pollution, traffic congestion, and oil dependency, as wells as a decline in community distinctiveness and cohesiveness (Urban sprawl, 2010). Yet, the people of America have lived this way for more than 50 years and many are blind to the implications that the suburban lifestyle has cost. Because the majority of American citizens are living in the suburbs, as architects and urban designers it is our duty to present a new and viable housing option to the public.

As suburban sprawl continues throughout the United States, urban areas are losing citizens to these suburban hubs. Unlike many of the developed nations of the world, it is projected that the population of the U.S. will continue to grow. Urban areas must prepare for this by offering its inhabitants an option similar to the suburban way of life that many people yearn for in order to retain citizens and strengthen the core of the city.

Located in Minneapolis, I will present an mixed-use community which exhibits the desired traits of a suburban community and dwellings. This residential building presents one way to create an appealing atmosphere for current and future homeowners to live within an urban area where there are currently more options for public transportation, pedestrian movement and nearby job opportunities than that of a suburban area. The building will work as a catalyst for architecture and urban design theories which allow for the city to grow in a controlled organic environment so that desirable residential units can be integrated into the fabric of the city.

Keywords: Suburbia, sprawl, mixed-use community

The SOI

Problem Statement

How can the essence of suburban life be captured in an urban mid-rise structure?

or

How can architecture aid in mitigating the effects of urban sprawl?

Statement of Intent

Typology

Urban Residential Mid-Rise Structure

Claim

An urban mid-rise structure that captures the essence of residential life in suburbia must contain aspects of suburban residential units, which are usually privately-owned, single or multi-family units with private parking and private outdoor space(s).

Premises

Urban mid-rise structures contain a community within themselves that are directly associated to the city in which they are set in.

Suburban residential units capture distinct differences from most urban residences that many people are looking for; defining and understanding these aspects gives us a hint as to what characteristics need to be implemented in the design.

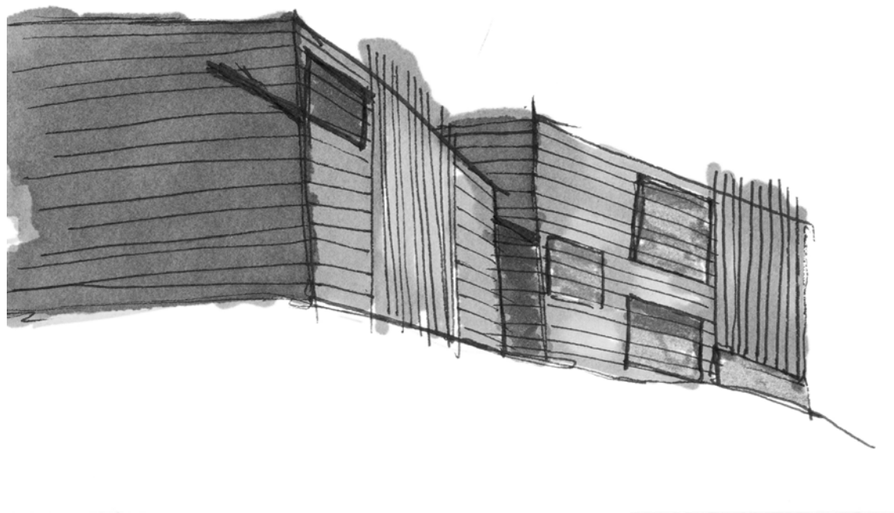
Families participating in suburban sprawl are often looking for an affordable, privately-owned housing unit with a yard, private parking, and privacy from their neighbors.

Theoretical Premise/ Unifying Idea

The urban mid-rise structure must adapt to the needs of people and families looking for the qualities that are contained within suburban communities.

Project Justification

Affordable urban residency is often difficult to find and very small, making it difficult to raise a family. In order for families to remain within the confines of an urban environment these residential units must adhere to the needs and demands of the modern and future residents of the city.



subURBAN: Proposal

Narrative

The desire to live in urban areas is dying in America. Suburbia has taken over as the primary location to raise a family. Reasonably priced single and multi-family housing is available in abundance due to the residential developments on the outskirts of American cities. The automobile is a necessity in suburbia due to the way zoning has dispersed the functions of a city as divided units with specific cultural functions. Integration of these functions is available in the urban environment, but available housing is difficult to find and poorly designed or decaying.

Architecture makes up the majority of a city's urban fabric. The way we design how the architecture and the infrastructure interact with the inhabitants of a city can change how people live. Redesigning the city redesigns a lifestyle.

Suburban sprawl has caused a number of problems in major metropolitan areas across America. In Minnesota, their have been major expansions of large suburban developments outside of the Twin Cities. Most of these suburban developments have similar characteristics that have affected both the city's core and the surrounding landscape. While sprawl expands outside the core of the city, it is also taking over extensive farmland in the state of Minnesota.

Zoning has completely segregated the function of space and human activity. While this has been viewed as a positive approach to design, the division between housing, working and consuming has created the necessity for automobiles in suburban America. In the suburbs we no longer find people who walk during the day because it would be unnecessary or nearly impossible to get to their destinations by means of alternative transportation due to the lack availability.

In Japan, residential areas of numerous sizes are scattered amongst the rest of Tokyo's diverse urban landscape. The city grows organically and people are within reasonable walking distance to services and goods. Other than walking to one's desired location, taxis, bikes, automobiles, and public transportation are common methods of getting around the city. Public transportation and bicycle riding are by far the most prevalent methods of getting around. Because the automobile was not the primary means of transportation, people walk much more.

Creating urban environments that allow for mixed-use spaces that grow organically is beneficial to people on a number of levels, especially health. With obesity hitting America so hard, this layout proves that current methods of zoning are hindering the possibility to walk to a number of essential locations. While this is not the only reason for the drastic rise of obesity in America it cannot be ignored as a contributing factor.

Our economy and our citizens are incredibly dependant on fossil fuels, especially oil and gasoline, because of our dependency on automobiles. Without the need to drive everywhere, walking would once again become a viable option that would save money on gasoline. This is money that remains in the consumers' pockets and into goes our struggling economy.

Being culturally active in an urban area is an everyday occurrence. The proximity of recreational and cultural institutions to commercial and retail complexes create a place where people are always interacting with the functions that make up the urban fabric: architecture, green spaces, and infrastructure. Exposure to this fabric trains society to be critical and accepting of all facets of culture, including the arts, ethnicities and economic diversity. Training the young people who are going to be a majority in the years to come will increase the chances of a society that is more aware and involved with social and economic problems and achievements at home and around the world.

User / Client Description

The proposed residential and subsidiary buildings will attempt to reshape how people live and work within the urban fabric of Minneapolis, Minnesota. The complex will change how residents interact with their peers and surroundings. The architecture will take on a new form which implements green spaces and sustainable design practices. Unlike the majority of housing in the city, the architecture will attract residents, consumers, and city dwellers with a design that harmoniously unifies the site, the context, and functions.

RESIDENTS

While the program will determine the size of the building and the possibility of residential units, the project will be focused on residential design within the urban construct that brings the desired elements of suburban dwellings. The project is intended to unify this new type of architecture and its inhabitants with the rest of the surrounding community.

Private green spaces for residents will offer them their own parcel of land, something that most dwellings in the city do not have. Private parking and heightened security will also provide both safety and ease of access to all of the residents.

COMMUNITY

The community is encouraged to interact with the public spaces created by the site, including the convenience store and green spaces. Green spaces within the city provide a relaxing environment which contrasts with the high stress and activity levels which encompass the majority of the city and its residents. Developing a convenience store in the city which functions at a different level than a gas station will provide urban residents with a place to do their shopping along the path of public transit systems and within walking distance of residential, commercial, and cultural centers that fill the city.

The relatively small convenience store will four employees at a time and will have parking available for the employees. On site parking will not be available, street side only, to both conserve space on the site and promote walking or the use of alternative transportation, like public transportation or bicycling.

Major Project Elements

The goal of this project is to create a piece of architecture that promotes a healthy urban environment in which people can live, work, and relax. Many people desire the elements that suburbia has to offer. By reinvigorating and adding these aspects to the urban landscape, the fabric of the city will take on a new and revitalized approach to city living.

RESIDENTIAL UNITS

The core of the design is the emphasis on developing urban residential spaces which implement concepts derived from suburban dwellings. These spaces will attempt to breathe new life into the city and promote the organic growth of residential units throughout the urban environment. Multiple styles and price ranges will be available to provide housing opportunities to a wider clientele.

GROCERY STORE

A grocery store on the site would allow for those living on and near the site the opportunity to purchase their groceries from a neary place with train and bus transportation availability. It would also promote human activity on the site and bring people into the public green spaces.

GREEN SPACES

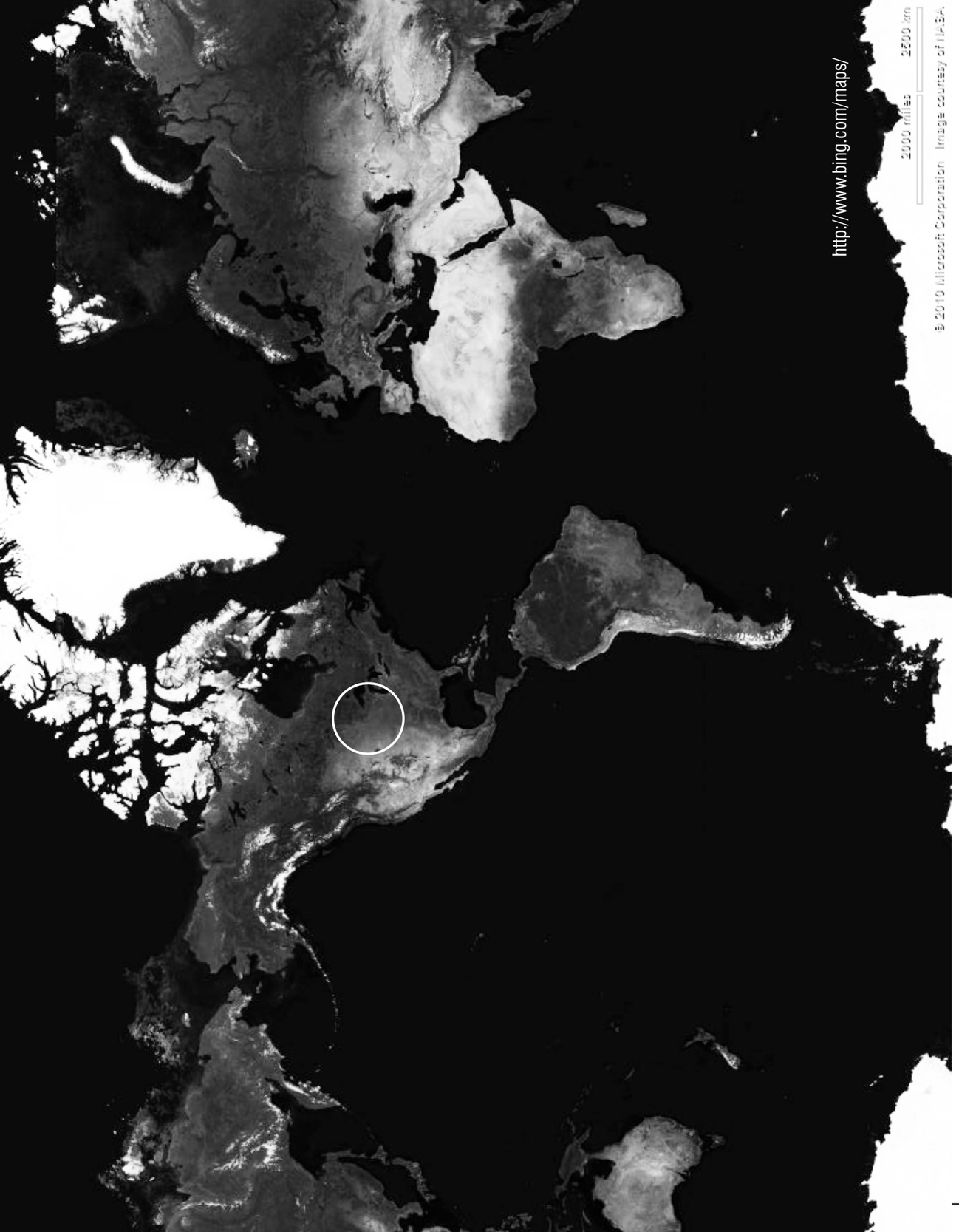
Providing both public and private green spaces is important to the new approach to designing the urban landscape and its architecture. A public park will be designed to provide outdoor gathering spaces and a serene setting in the midst of a booming cultural and economic hub. Private and semi-private green spaces for residents will provide elements of suburbia that residents desire.

PARKING

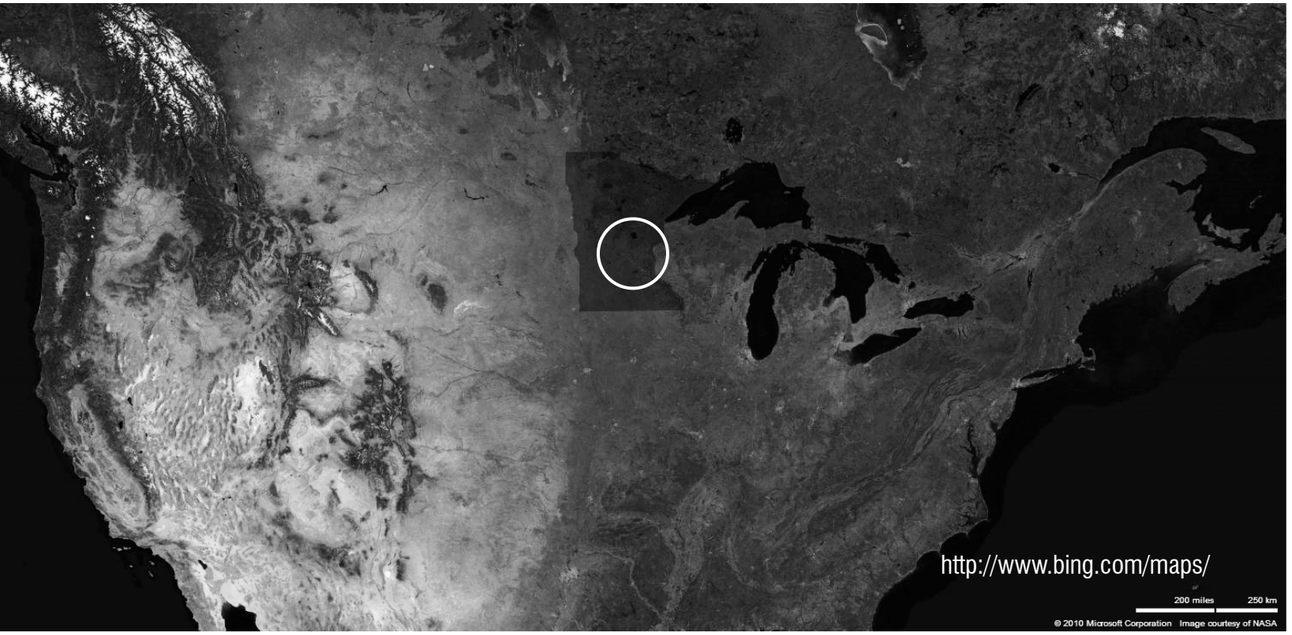
Private parking will be provided for all residents and employees of the buildings on the site. Private underground parking will be available for tenants and employees while an abandoned parking structure will be revitalized nearby the site to provide parking for patrons.

TRAIN TERMINAL

The site is located along the 888 - Northstar Commuter Rail line and a structure will be designed to shelter the small terminal. Encouraging the use of public transportation is important to reduce our dependency on cars and fossil fuels and promote the use of public transportation.



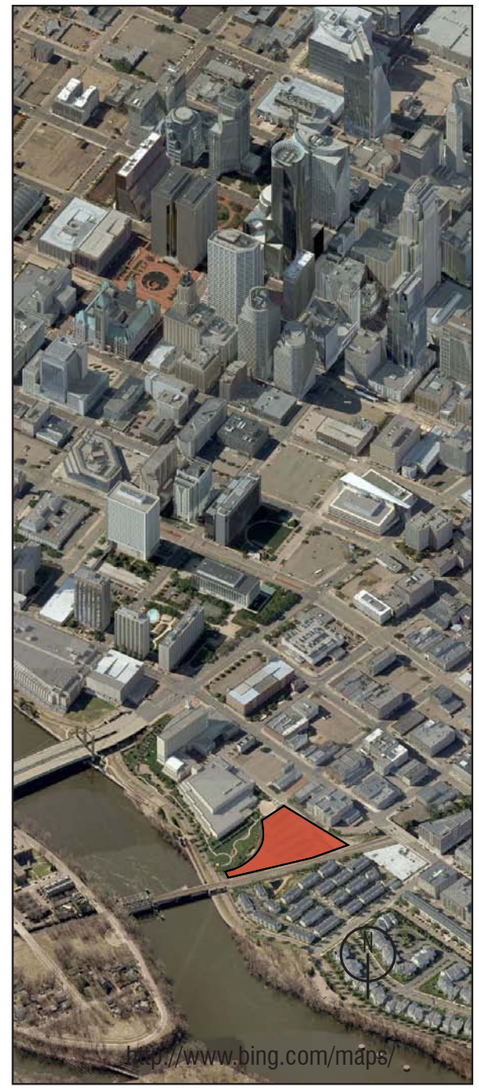
Site Information



Minnesota is located in the Northern Midwest region of the United States, bordering Canada, Wisconsin, Iowa, South Dakota and North Dakota. Four distinct seasons are experienced in Minnesota, with high temperatures in the summer reaching above 90° F and winters dropping well below 0° F. St. Paul is the capital of Minnesota and Minneapolis is its largest city. The 2009 population estimate was 5,266,214 people. Minnesota is 86,939 square miles (Minnesota, 2010).

Minneapolis, Minnesota is located on the west bank of the Mississippi River, upstream from the state's capital city of St. Paul. Together the two cities form the core of the Twin Cities metropolitan area. Minneapolis is the state's largest city with a population of approximately 380,000 people. The word Minneapolis is a combination of the Dakota word for water, *minne*, and the Greek word for city, *opolis*. Downtown Minneapolis is a common Midwestern prairie city. Wide streets are arranged in typical Jeffersonian grid fashion, which is actually at an approximate 45-degree angle and follows the local flow of the Mississippi River. Larry Millett's book, *The AIA Guide to Downtown Minneapolis*, defines five distinct districts that compose Downtown Minneapolis: the Central Core, the Warehouse District, Hennepin Avenue and the Central Riverfront, Downtown East and Elliot Park, and Loring Park (Millett, 2010). Each of these districts have character-defining features, making each neighborhood unique.

My thesis site is located in the historic Warehouse District of Minneapolis, an area Larry Millet, calls "one of the city's most desirable places to live, work, and play." The district is currently host to a great deal of economic activity. The majority of the neighborhood lies within national and local preservation districts and was the site of a number of very successful industrial warehouses.



View of Site

Project Emphasis

Unless we start changing the ways we design our cities and the architecture within them suburban sprawl will continue to spread and our cities will lose their density and population. Modern zoning laws that were established have to consider how a more organic growth of the city will change the way we interact with the urban environment. Designing a piece of architecture that is embedded with the values that are offered in a suburban setting will encourage people to live and work in a healthier urban environment.

With the concern of sustainable practice, public health, and holistic architectural development, a piece of architecture can start the necessary process of change. While most of the world's nations are predicting population decline, America's population is predicted to grow due to continually high amounts of immigration. The urban environment can promote better health, living, and working conditions with good design.

Placing an emphasis on creating a healthy and desirable urban residential way of living in the future will eventually lead to a healthier lifestyle in American cities. While suburban areas are the desirable place to live, bringing people back into the dense urban city will revitalize a way of living that endorses the use of public transit, encourage walking to desired and necessary destinations, and bring cultural awareness to its inhabitants through interaction.

A Plan for Proceeding

RESEARCH DIRECTION

A combination of quantitative and qualitative research will be conducted to understand the context in which I'm working. Understanding the elements of the unifying idea, project typology, site/context is important and will be researched in the following fields:

Suburbia and Suburban Sprawl
History of Minneapolis
History of urban design (planning)
Zoning
Obesity in American cities
Green spaces within the urban construct
Collective housing

DESIGN METHODOLOGY

The approach to design methodology will be conducted using both qualitative and quantitative strategies. Site visits, multi-media research and representation of ideas through images, writings and models will be implemented in order to understand the research topics as stated above in order for an informed design.

DOCUMENTING THE DESIGN PROCESS

Documentation of research, ideas, and design work will be conducted every other week to display how the research has informed my ideas and design work in order to make a strong argument for my final solution. Research of the stated topics will be conducted throughout the design process in order for the work to grow and inform one another holistically.

Previous Studio Experience

Second Year

Fall 2007: Stephen Wischer
- Tea House - Fargo, ND
- Mississippi River Rowing Club - Minneapolis, MN
- House for Twins - Fargo, ND

Spring 2008: Malini Srivasta and Mike Christensen
- Casa Dieste Casting
- Community Design - Fargo, ND

Third Year

Fall 2008: Cindy Urness
- Center for Excellence - Fargo, ND
- AIAS Kawneer Lake Agassiz Regional Library - Moorhead MN

Spring 2009: Ron Ramsay
- Shaker Concert Hall - New Lebanon, NY
- Eisenhower Health Club - Chicago, IL

Fourth Year

Fall 2009: Bakr Aly Ahmed
- San Francisco High Rise - San Francisco, CA
- KKE Percussion Instrument Competition

Spring 2010: Darryl Booker, Paul Gleye and Frank Kratky
- Informal Settlements Urban Design - Santo Domingo, Dominican Republic
- Livingston School, Marvin Windows Competition - Tanzania, Africa

Fifth Year

Fall 2010: Steve Martens
- NRHP Research and Design - Fargo, ND

"... to provide continuity - not only inside each particular building but in the exterior spaces as well as interior - is the most important thing in the design of collective housing."

Manabu Chiba

subURBAN: Program

Research Results and Goals

THE RISE OF SUBURBIA

Suburbia is being called home to an increasing number of people living in Western societies. In the United States, more people live in the suburbs than the cities they surround, and 75% of all new construction is taking place in the suburbs ("The challeng of Suburbia," 2004). The effects of suburbia's stretch across the land has had a drastic affect on American society. Culturally, physically, and psychologically, the American people have developed a way of life that has become detrimental to themselves and their environment. Urban sprawl, also known as sprawl or suburban sprawl, has been correlated with increased energy use, pollution, traffic congestion and oil dependency, as wells as a decline in community distinctiveness and cohesiveness (Urban sprawl, 2010). Yet, the people of America have lived this way for more than 50 years and many are blind to the implications that the suburban lifestyle has cost. Because the majority of American citizens are living in the suburbs, as architects and urban designers it is our duty to present a new and viable housing option to the public.

The roots of sprawl are vast. Suburbia is a reaction to social, political, and ecological issues that arose at the turn of the twentieth century. Matthew Lindstrom, author of *Suburban Sprawl*, defines sprawl as a wave of development occurring at the fringes of metropolitan areas (Bartling & Lindstrom, 2003). Lindstrom also states that, "it is important to recognize that suburban sprawl did not just emerge 'out of the blue.' It was the product of conscious decisions, political contestation, and the assertion of social, political, and economic relations of power" (Bartling & Lindstrom, 2003 pg. xiv)

At the turn of the century, metropolitan areas around the U.S. were experiencing exponential growth with the rise of the industrial city. With this growth came great wealth and poverty alike and these cities faced a number of growing social, political, economic, and ecological challenges. Critics, academics, and policymakers responded to these challenges with ideas of rational planning, cooperative housing, and worker-owned production. The success of these initiatives varied, but suburbanization, or sprawl, was the most prevalent sustained response to these issues. Thus, sprawl can be considered a "function of a variety of fundamental changes to the prevailing social structures of the twentieth century." (Bartling & Lindstrom, 2003 pg. xv)

In the industrialized city, mass transportation is easy and essential for daily commutes. Prior to the mass development of the automobile, a lack of private vehicular ownership ensured the need for public transportation. A reciprocating relationship exists between the development of the automobile and the expanse of suburbia. With the rise of automobile production and decline in their cost, individuals had the opportunity to commute without the need for public transit. Coupled with the development of the interstate highway system, communities had the ability to spread to the fringes of metropolitan areas. Families now had the opportunity to move away from the dense cities and commute with ease to the congested metropolitan areas. This created a greater need for infrastructure that accommodated a significant rise in individual transportation. New communities that were developed on the outskirts of the metropolis were not designed for public transportation but with an abundance of roads that allowed for and promoted the use of individual means of transit.

According to U.S. census figures, the national percentage of the population commuting individually is rising while the use of public transportation for commuting is decreasing. In 1960, 12.1 percent of the population used public transportation for commuting and 64 percent drove automobiles. In 1970, 8.9 percent used public transportation and 77.7 percent drove; in 1980 these percentages changed to 6.4 and 84.1 respectively; the 1990 census revealed these figures as 5.3 percent and 86.5 percent; in 2000, the population utilizing public transportation dropped to 4.7 percent and individual transportation rose to 87.9 percent (Bartling & Lindstrom, 2003). When we consider that the population grew from approximately 189,000,000 in 1960 to 291,000,000 in 2000, we can deduct that there are

many more vehicles on the road today than ever before. The effects of this rise in single-occupancy vehicular use are evident across the board. Traffic has become a major problem for individuals in suburbia commuting to and around metropolitan areas. Many people spend literally hours every day in their car driving to and from work. Richard Crotty is the Mayor of Orange County, Florida, and Chairman and Chief Executive Officer and Chairman of the Orange County Board of County Commissioners. Crotty described traffic gridlock as "a quality of life issue as much as anything else… When you spend more time in your car than with your kids, it's a crisis" (Bartling & Lindstrom, 2003 pg. xii).

The rise of the use of the automobile did not just happen overnight, though, and is not the only problem with suburbia. Matthew Lindstrom states, "Seeking to impose order on the chaotic elements of the industrial city, the new class of planners, architects, and engineers used the model of the machine, with its elegance, predictability, and symmetry, as the template for a new urbanism" (Bartling & Lindstrom, 2003 pg. xvi). Ebenezer Howard could be considered the godfather of modern zoning. Although he was not trained as a planner, his seminal work *Garden Cities of To-morrow* presented the idea of a garden city which was to be a "perfectly ordered place where the functions of social life- living, working, consuming, producing, and engaging in civic activity- were to be given their specific place, spatially separated from each other" (Bartling & Lindstrom, 2003 pg. xvii).

This separation of function became the standard template for city planning. Municipal zoning laws were developed and implemented as a reaction to mitigate the chaos of industrial cities, separating functions and creating order. New York City's law of 1916 is often cited as the first comprehensive attempt at zoning. The choice to adopt these zoning regulations was a direct response to the construction of the Equitable Building, which towered over the neighboring residences and covered all available land within the property boundary. But it is in the suburban area where zoning restrictions have been applied the most. Suburban communities were being developed as clean slates for urban planners and strict zoning ordinances could be established from the beginning of development. In 1926, zoning ordinances were questioned in Euclid, Ohio. Though initially ruled unconstitutional by lower courts, the Supreme Court upheld the zoning ordinance and deemed it a necessary municipal planning instrument, quoting an Illinois Supreme court case that justified zoning as the:

> promotion of the health and security from injury of children and others by separating dwelling houses from territory devoted to trade and industry; suppression and prevention of disorder; facilitating the extinguishment of fires, and the enforcement of street traffic regulations and other general welfare ordinances; aiding the health and safety of the community by excluding from residential areas the confusion and danger of fire, contagion and disorder which in greater or less degree attach to the location of stores, shops and factories. (Bartling & Lindstrom, 2003 pg. xvii)

This justified zoning as a method of civic betterment by bringing order through segregation (Bartling & Lindstrom, 2003). By segregating civic institutions from residential neighborhoods with the ideals of restrictive zoning, suburbia has become a vast expanse of single functioning districts of land. Residential communities tend to make up the majority of suburbia as commercial and office areas generally require the use of less land. This has increased the need for the use of individual modes of transportation. The extensive use of the personal automobile and the development of infrastructure that come along with it have made public transportation development far too expensive to expand across the suburban landscape. Because of this, residential subdivisions lack sidewalks, municipal zoning codes require substantial parking spaces for commercial and business development, and road construction and widening receives considerably more public funds than pedestrian and bicycle paths and metropolitan public transportation (Bartling & Lindstrom, 2003).

The "crisis" as stated above, created by the expansive

developments of suburbia, has had profound effects on the natural world. Increasing ownership and usage of the automobile, coupled with the necessity to commute along expansive suburban and urban roads alike, has skyrocketed the nation's dependency on oil. Automobiles require many products derived from petroleum, including gasoline for power, plastics and vinyls for parts and interiors, and asphalt for driving on. Additionally, the American people are spending an absurd amount of money on these products every year in the form of consumption and taxes for infrastructure repairs and development. Excessive paving and construction have caused ecological damage in the form of runoff. This runoff enters our lakes, streams, oceans, and ground water. Automobile emissions pollute our air and are a major contribution to the diminishing of Earth's atmosphere and global warming.

In addition to negative ecological effects, suburban sprawl has had effects on the American public. The dynamics of suburbia are a contributing factor to obesity problems in America. In 2004, the U.S. Centers for Disease Control and Prevention (CDC) ranked obesity as the number-one health risk facing America. According to obesityinamerica.org, "Obesity currently results in an estimated 400,000 deaths a year in the United States and costs the national economy nearly $122.9 billion annually" (Obesity in america, 2011 http://www.obesityinamerica.org/statistics/index.cfm). Obesity increases a person's risk for developing such health risks as diabetes, heart disease, hypertension, metabolic syndrome, and polycystic ovary syndrome. Obesity is also tied to lower self-esteem, depression and discomfort in social situations, and can diminish one's quality of life (Obesity in america, 2011). While suburbia cannot be attributed as the main factor for the rise of obesity America, it cannot be ignored as a contributing factor. According to the CDC website, obesity rates in Minnesota, the location of my site, reached 24.6 percent in 2009.

The nature of sprawl is expansion. Post-World War II society experienced a massive spike in population as a result of the baby boomers and immigration. At the time, the rise of suburbia was well under way. The need to adequately house the growing population led to massive construction projects on the fringes of metropolitan areas. According to Adam Rome, author of *The Bulldozer and the Countryside*, industrial innovators like William Levitt "began to wed the mechanistic processes that animated industrial mass production with housing construction" (Bartling & Lindstrom, 2003 pg xvi). These "Levittown" developments were characterized by houses that implemented the use of "interchangeable components on land that had been flattened and cleared of much of the existing vegetation" (Bartling & Lindstrom, 2003 pg xvi). Suburban developments were and still are designed with homogeneous architectural styles, where the same houses exist in massive numbers in single developments. Architectural ideologies of high and meaningful design are lost due to cheaply built, mass-produced houses. Most of these suburban housing developments are conceptualized and produced before the necessity for housing even exists. Housing developers invest in land and construct hundreds or thousands of housing-on vast expanses of land which lie vacant and wait to be sold, sometimes for years at a time.

One of the biggest problems with sprawl, in my opinion as an architect and inhabitant, is how it has led to a lack of community distinctiveness. The architecture of many of these suburban hubs is of mediocre-at-best caliber. As stated earlier, 75 percent of all new construction in the United States is taking place in suburbia. Out of these constructed buildings, though, less than 5 percent are architect-designed. ("The challenge of suburbia," 2004) This means the majority of American architectural projects are not being designed by architects at all. Suburbia is filled with single-family timber frame houses that do not have any sort of architectural significance. Commercial and retail centers are primarily cheaply-designed and constructed buildings consisting of strip malls or glorified pole barns with extravagant signage. Large retail stores that are designed to the exact same standards are displaced across the suburban landscape, and stores like Wal-Mart may have multiple stores in one city alone. A sense of place and commu-

nity is not established as one can move from city to city and see the exact same architectural compositions with few tweaks in design.

This is not new to America, though, as architecture and art have not been major components of American society since the nation's origin. Robert Hughes, in his book *Culture of Complaint*, explains how the men and women living in 17th century New England did not spend much time focusing on the visual arts. "Most Americans saw no monumental sculpture; few great churches, and none on a European scale of effort and craft…and… no museums. And everything was new" (Hughes, 1993). It seems this has transcended through to present day America. All of the buildings that sprawl has generated are new and most lack quality design.

The location of sprawl exists at the hinge of the metropolis, bordering regions of either wilderness or farmland. According to the American Farmland Trust, the population of the United States increased 17 percent between 1982 and 1997, but the amount of urbanized land grew by 47 percent. They also predict that the country's dairy, fruit, and vegetable production could be in jeopardy if sprawl continues like it has(Bartling & Lindstrom, 2003). There have been many instances where the spread of suburbia has led to the destruction of important natural settings.

As the majority of the developed nations are estimated to experience a decrease in population, demographers estimate that the U.S. population will surge by an additional 100 million people over the next 40 years. This is due to a high American fertility rate along with a high rate of immigration (Brooks, 2010) It is more important now than ever to reduce the rate of sprawl and mitigate the effects sprawl is having on the American landscape. If it continues the way it has many of the nation's wilderness and rural lands will be demolished for faceless communities that reduce the unique character of the land and its people.

REDESIGNING URBAN RESIDENTIAL

I have lived in a suburban area my entire life. The idea of suburban sprawl has been an interest of mine for years now; it developed around the same time I knew I wanted to be an architect. As a student in high school, I was taking independent studies and drafting and I worked a part-time job performing land surveying with O & S Land Surveying Inc. during the summer. The majority of work was housing subcontracted by larger engineering and surveying companies, city and county governments, and private home owners, often for a fencing job. We worked all over the Twin Cities Metropolitan Area, but the majority of our work was located in the suburbs. The most interesting places that we worked at were at the outskirts of the primary suburban sect. It was in these areas that I first questioned these expansive, monotonous, single-detached and multi-family townhouse developments. I worked for Mike Vacca, the owner of the company, for two separate summers. My first summer surveying was before my senior year of high school in 2005, and the second time was after my freshman year at North Dakota State University in 2007, at the same time I was accepted into my Masters of Architecture studies. During my second year of working as a surveyor I became amazed at the changes that had occured in the suburban landscape. The natural surroundings and farmland that once existed in these areas during my first year of work were often torn down in place of a typical suburban residential area or suburban commercial district, and each area looked almost the exact same as the next with very subtle differences. What was once distinct about the landscape, and a hybrid of wild and rural settings, was being transformed into a clone of its neighboring cities.

In Architecture 461 – Urban Design History and Theory, taken during my third year, our final assignment was to write an urban design manifesto. During this thesis research, I looked back on my response to this assignment. After reading I realized that my ideas on urban design haven't changed much since it was written two years ago. It reads like this:

I believe the most important element of a city is the interaction of the people within the city. Whether these people are local residents or tourists, human interaction is what makes a city great. Once these interactions are lost, the city will lose the people and move toward desolation. In order to avoid the declination of a city, we as designers must provide an urban layout that will provide the city with an abundance of chances for human interaction. This has to be done skillfully and minimally, though, as I also believe that the growth of any great city should happen organically. In this sense, the spaces will become what the public or private ownership deem desirable without the tight restrictions of zoning ordinances. In order to achieve this balance, as an urban design professional I will have to propose an urban layout which provides the city with what I feel to be suited for the site, maximize human interaction and providing the city dwellers a desirable and memorable place to be. I believe that the responsibility of urban designers and architects is to present the public with a city layout which provides the citizens with a public transportation system, parks and public greenspaces, and a balanced layout of places of work, housing, tourism, and recreation in close proximity. As designers, we feel the need to control every aspect of our projects down to the very last detail, but I think that same ideology cannot be practiced in the planning of a city. Cities are meant to grow as the public's needs from the city change through time. This provides a uniqueness that is only attained when a strict urban layout is not set in place and the city has the opportunity to grow as needed. Through this growth, expansion opportunities occur both culturally and economically (Bugge, 2009)

Since this was written, I have spent time in Chicago, San Francisco, and cities around Japan. My findings from each trip have strengthened these ideas and my fascination with the urban landscape, from nucleus to hinge.

In order for any proposed solution to work at any level, the design must be desirable to the public, luring them away from the seemingly perfect life that exists in suburbia. My idea for this thesis is to create a piece of architecture which is a catalyst for a new approach to designing residential homes within urban settlements with regard to both architectural and urban design principles. By designing a residential building in an urban area that contains the desirable aspects of a dwelling in suburbia I am proposing a new type of residential architecture in the region which works as a catalyst for an urban design solution. Understanding the desired aspects of suburban dwellings and incorporating them in a denser, urban setting is paramount to the success of the design.

So what are the desirable features of a suburban dwelling? The majority of suburban homes are single-family detached houses. Privacy and safety are two of the major draws of a suburban home. Private yards, patio spaces, and parking spaces, including garages and driveways, provide the owners places to live comfortably and raise a family with plenty of space. Single-residency detached housing has additional privacy due to a buffer zone between dwellings, freeing sets of occupants from having to hear one another with shared walls. The majority of these homes are privately-owned, offering a sense of ownership and property investment which should appreciate over time. Many options are available regarding home and property size, including square footage size, volumetric size, and number of bedrooms and bathrooms, which come in a wide price range. All of this also to increase the view of a higher level of safety associated with living in the suburbs. Suburbia also has a bit of a natural environment which is desirable to many people. While this natural environment is actually being torn down because of sprawl, people living in suburbia or desiring to live in suburbia view natural aspects associated with suburban landscape. Parks, woodlands, prairies, and water features are desired features associated with the suburban setting.

Approaching the design of such a residential building has led me to a wide variety of typological and philo-

sophical studies in architecture and urban design. I have conducted research in the fields of collective housing, phenomenology, new urbanisms, metabolism, and landscape architecture, to name a few, as I prepared to develop a program and basis for design.

Perhaps the most influential works I have come across are the built and written works of Steven Holl. Holl's works are often associated with the idea of phenomenology in architecture. Phenomenology is described by the *Encyclopedia Britannica* as the direct investigation and description of phenomena as consciously experienced, without theories about their causal explanation and as free as possible from unexamined preconceptions and presuppositions (Holl, 2007). Phenomenology in the field of architecture extends to the idea that the body exists in real time and life is experienced primarily through the flesh, what phenomenologist Maurice Merleau-Ponty described as the "flesh of the world" (Pallasmaa, 2010 pg. 3).

In a work titled *Urbanisms* by Steven Holl, he states "with the smallness of the earth and what we know about it, every act of building is in some way an urban act" (Holl, 2007 pg. 158). Holl discusses the importance of understanding phenomenology at an urban level by saying, "The phenomenal qualities of the light and space of particular cities is part of the important characteristics determining qualities of life… experiential and phenomenal power of cities cannot be completely rationalized and must be studied subjectively" (Holl, 2007 pg. 157). He speaks of the importance of architecture as a catalyst for urban progression, and that we must be aware that architecture always has urban consequences. He states:

> My argument for the architectural project as an urban catalyst is an argument for idealistic incremental actions instead of master plans. Master plans, endlessly debated and politically positioned, move too slowly in the 21st century to be effective. Usually they are altered beyond recognition or shelved (Holl, 2007 pg. 159).

> Of course we need well-planned overall visions, especially in transportation and infrastructure, but our urban experience is shaped through the realization of specific architectural projects (Holl, 2007 pg. 159).

Earlier in the essay, Holl states, "By inserting architectural elements into complex urban situations (insertions), we found that we can generate new emotions. Architectural insertions can change weightiness into lightness, and lifeless into liveliness or vice-versa depending on the specific situation" (Holl, 2007 pg. 158)

MINNEAPOLIS, MN

I would like to set the scene of the Twin Cities, Minnesota with the opening paragraph of the introduction to Larry Millett's book, AIA Guide to the Twin Cities:

> An architect from London once spent a day touring Minneapolis and St. Paul. It was his first visit to the American Midwest, and after he had seen all the usual sights, he had a simple question: Where, he asked, is the city? The question is not as strange as it sounds. With long blocks of single-family houses standing on 40- or 50-foot-wide lots along well wooded streets amid thousands of acres of lakes and parks and winding waterways, the Twin Cities would strike almost any European as essentially suburban, in places almost rural, in character. Fly across the Twin Cities on a summer day, and what you see is mostly forest and water, with skyscrapers of the two downtowns providing the best evidence of urbanity somewhere down among the trees (Millet, 2007 pg. 3).

The word Minneapolis is a combination of the Dakota word for water, minne, and the Greek word for city, opolis. Downtown Minneapolis is a common Midwestern prairie city. Wide streets are arranged in typical Jeffersonian grid fashion, which is actually at an approximate

45-degree angle and follows the local flow of the Mississippi River. Millett's book *The AIA Guide to Downtown Minneapolis* defines five distinct districts that compose Downtown Minneapolis: the Central Core, the Warehouse District, Hennepin Avenue and the Central Riverfront, Downtown East and Elliot Park, and Loring Park (Millett, 2010). Each of these districts have character-defining features, making each neighborhood unique.

The success of the city has roots to its early development as a central commercial center in Minnesota in the mid-1800s, rivaling the nearby state capital city of St. Paul. While St. Paul was settled first, Minneapolis was settled upstream the Mississippi River near St. Anthony Falls, and Millett credits this waterfall for the emergence of the Twin Cities. Minneapolis grew rapidly due to the development of these falls, eventually absorbing the fall's early settlement of St. Anthony in 1872. The falls became a great source of power for the city and led to its rise as an industrial hub. Large pineries to the north and prairies to the south and west, which were ideal for growing wheat, centered the industry of Minneapolis on flour and saw milling. Two of the largest flour mills in the world, one owned by the Pillsbury family and the other by the Washburn family, were located in Minneapolis by 1881. The great success of the industry led to a spike in population growth as well. Between 1880 and 1890, immigration to the city caused the population of 46,000 to grow to 164,000 in only ten years (Millet, 2007).

In 1883, Minneapolis established the Minneapolis Park Board, which developed the exceptional park system that exists today. The park board also aided in the development of the lake district in 1900 by improving the city's lakes. Prior to these improvements, carried out by dredging the lakes, they were more like swamps and "had been better known for attracting mosquitoes than high-class homes" (Millett, 2007 pg. 8).

Sprawl in the Twin Cities began with the introduction and wide use of the electric streetcars which ran from 1889 to 1954. According to Millett, though, "it's not fair to pin anything like sole responsibility for sprawl on the trolleys…" (Millett, 2007 pg. 8). He goes on, saying, "Instead, sprawl was all but inevitable given the devotion of Twin Citians to the ideal of the single-family home (row houses have always been rare, while apartment buildings weren't constructed in large until the 1920's) and the ready availability of developable land in every direction" (Millett, 2007 pg. 8). Today, the Twin Cities is one of America's least dense cities with a combined population of 670,000 spread across 114 miles and a metropolitan area with 3,000,000 inhabitants spread out over 50 miles from the downtown cores (Millett, 2007).

Modern day Minneapolis is a cosmopolitan city filled with culture and great architecture. The city boasts excellence in performing arts, visual arts, education, finance, advertising, and manufacturing and is a hub of trade, industry, transportation and finance for the Upper Midwest. The large businesses that exist in Minneapolis, including General Mills, 3M, Medtronic, and Target Corporation, cycle a lot of money back into the community and contribute to local foundations that fund education and the arts. Great architectural works have been designed by international and local architects alike and include Target Field by Populous, the new Guthrie Theater by Jean Nouvel, the IDS Center by Philip Johnson, the new Federal Reserve Building by HOK, and the new Minneapolis Central Library by Cesar Pelli, to name just a few.

Minneapolis continues to be ranked in numerous publications' top and best city lists as one of the highest-ranked cities in the nation in terms of housing, education, health, sustainability, and economy. Yet in the last 10 years the population of the city has dropped as sprawl continues to draw inhabitants away from the central core of the Twin Cities. In order to strengthen the city and community of Minneapolis, people will have to start moving back to the city. Density aids in the amount of human interaction and can allow people to live a healthier and more affordable life.

RESEARCH SUMMARY

Suburbia has had a profound effect on the American culture and landscape. Sprawl has led to problems associated with the destruction of the wilderness and rural landscape, has driven the necessity and overuse of fossil fuels, has led to an increase in pollution, and has negative effects on the citizens of suburbia. For these reasons and the others described above we must realize that action must be taken to reduce negative effects.

Understanding suburbia is of utmost importance to the success of this thesis project. While it is important to understand the negative effects suburbia has had on society, it may be even more important to understand the reasons for the success of suburbia. Low prices for large amounts of space may be the largest driving force behind the reason for living in suburbia. In the Twin Cities Metropolitan area, land availability for suburban developments are not limited to any sort of naturally occurring barrier. Developers have plenty of opportunities to purchase expansive amounts of rural property fairly cheaply from landowners knowing that they will make it back when the houses begin to sell.

I also believe that most people have no idea about the negative effects of suburbia, not because of a lack of intelligence, but because the idea has never entered their brain. When the public was introduced to the effects of global warming, the idea of sustainability and being "green" came to the forefront of society. People became more conscious of their decisions and how they affect their surroundings. Sustainability became a major commercial commodity due to the shift in conventional wisdom, and many companies from a wide spectrum of business types made sustainability a major selling point.

Successful mitigation of the effects of sprawl depends on three steps: INFORM, OPTIONS, ACTION. This thesis project starts the process and will produce the first two steps. The first of these three steps has been drawn up in the research results. Because this thesis project will be available to anyone interested, it stands as a source of relevant information on the topic of urban sprawl. Information and facts are a powerful tool and can wield great results when applied properly.

The next step of the project is defining and designing viable and desirable options for the public. Options need to be available to the public in order to make a conscious decision between living in sprawled suburbia or dense cities. These options must be available on multiple levels, including prices and design quality.

The final step in the process is action. While knowledge and options are necessary they will not get anywhere without an acting force behind them. The majority of people who come across this information on their own will probably already have an understanding of the negative effects of sprawl. For many years art and architectural practitioners have attempted to convey their problems with certain aspects of society. Robert Hughes states, "The most celebrated, widely reproduced and universally recognizable political painting of the 20th century is Picasso's Guernica, and it didn't change Franco's regime one inch or shorten his life by so much as one day. What really changes political opinion is events, argument, press photographs, and TV." (Hughes, 1993 pg. 185) An outlet besides the internet and self- discovery needs to be available in order for change to ever truly take place.

Before conducting the majority of the research, I had drawn a number of my own ideas and conclusions about suburbia and its effects on society and the land. Many of these ideas were reinforced with the research and have reassured me on my decision to choose sprawl as the driving force behind my thesis project. Research on urban manifestos and ideologies and architectural design theories have provided me with insight into how to approach the final design of this thesis project. Perhaps the most important thing I read during my research is a quote from Steven Holl, located in the preface to *Questions of Perception: Phenomenology of Architecture* and reads:

“Architecture does not so much intrude on a landscape as it serves to explain it.” “Architecture and site should have an experiential connection, a metaphysical link, a poetic link” and “...if we consider the order (the idea) to be the outer perception and phenomena (the experience) to be the inner perception, then in a physical construction, the outer perception and inner perception are intertwined” (Holl, Pallasmaa, & Perez-Gomez, 2006 preface).

JAPAN

Shimouma, Setagaya, Tokyo

Shimouma 4 Houses

architecture WORKSHOP

UNITED STATES

Cambridge, Massachusetts

Simmons Hall, Massachusetts Institute of Technology

Steven Holl

MEXICO

Mexico City

Loft Building at Alfonso Reyes 58

Dellekamp

Case Studies

Shimouma 4 Houses

architecture WORKSHOP

Shimouma, Setagaya, Tokyo

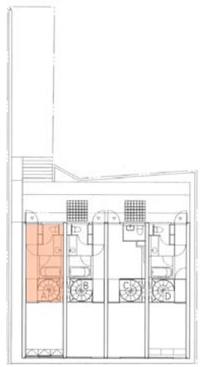
2003

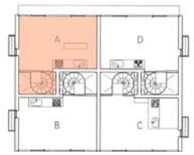
Four Row Houses

architecture WORKSHOP's Shimouma 4 Houses is located just outside the center of Tokyo in a dense residential area consisting of mixed houses and apartments. The rectangular site it sits on is approximately 2500 ft², divided by a narrow access way and adjacent to the Shimouma Town Houses, another project by architecture WORKSHOP completed a year prior. Each residency is approximately 1000 ft² and contains four open spaces which have no designated use, allowing the owners of each unit to designate each space as they see fit. The house is divided into four dwellings, with floor plans that shift and allow the residents multiple views outside without inhabiting an entire floor. The structure is primarily concrete, iwth an earthquake-resistant Vierendeel structure in the middle floor of the house.

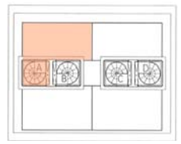
As Japan is a country where only 20 percent of the land

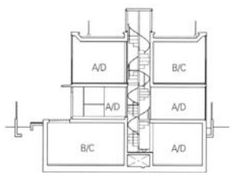
Basement


First Floor



Second Floor


Penthouse

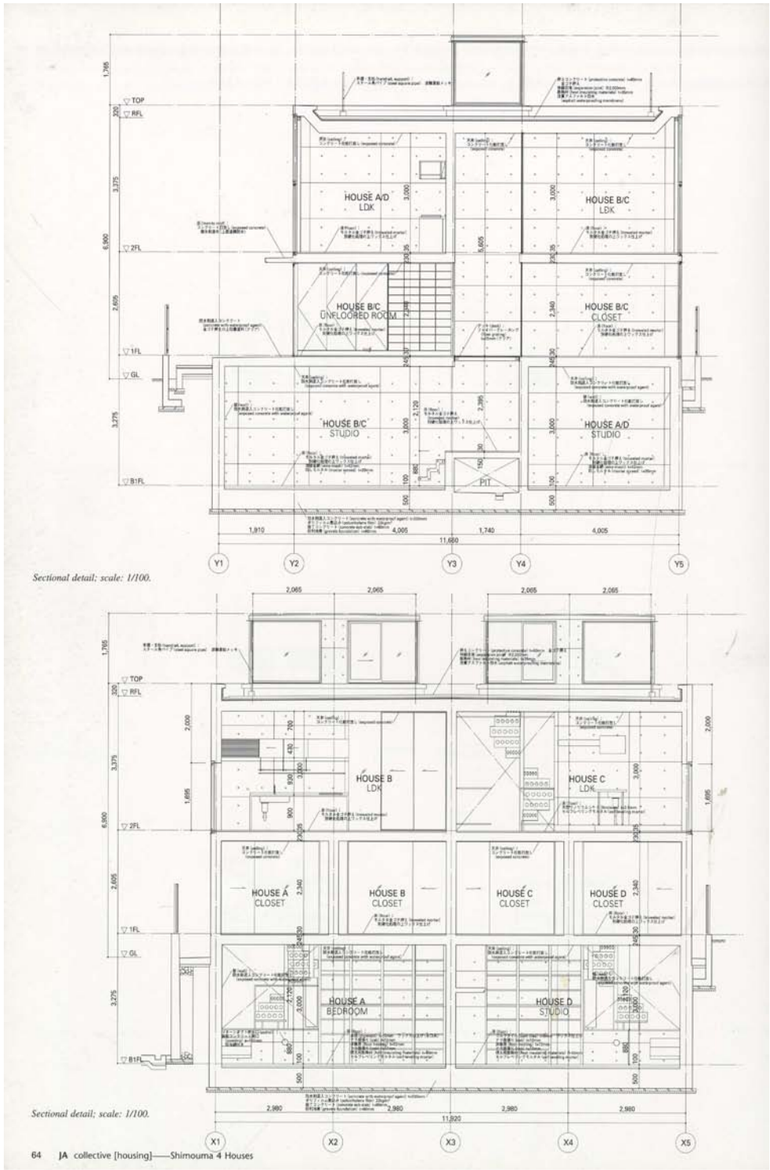


Section

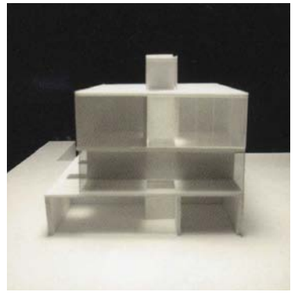
Section

is habitable due to mountains, designers have always had to be creative in how to use space. This project is a great example of how to create an interesting dwelling with minimal floor space. While a house under 1000 ft² may seem small to most Americans, it is actually close to the average size of a dwelling in Japan.

The design offers residents the opportunity to define the way space is used within the dwelling units, designing the architecture to accommodate the way they live their life. Modern approaches to architecture are attempting to create buildings and spaces so that they can be redefined according to the needs of the occupant. The open floor plan allows the building to remain a functional residence today with the availability of the spaces to serve a new function if a new owner so desires.



64 JA collective [housing]——Shimouma 4 Houses

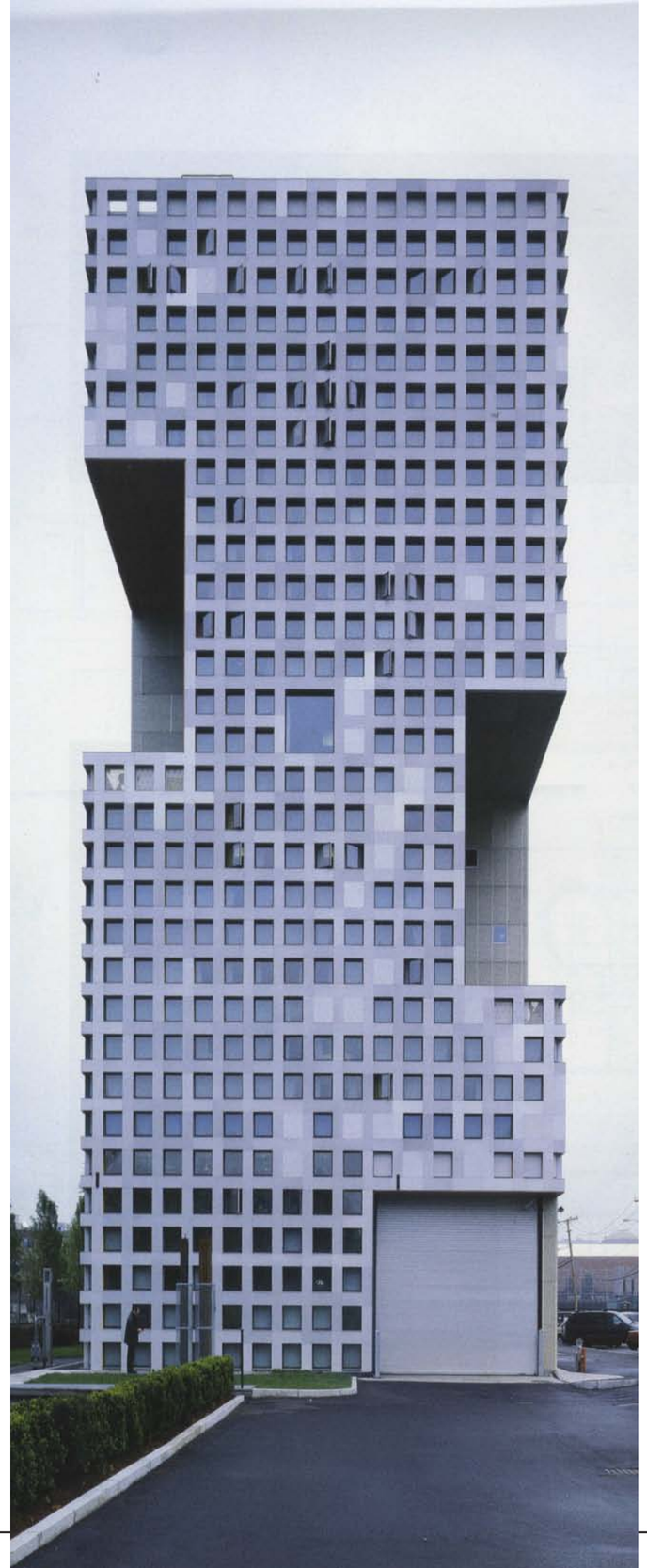


The shifting of floor plans allows the residents to occupy varied spaces horizontally with access to three exterior facades. The arrangement of space is innovative and proposes a way of exposing dwellings of a larger scale to exterior exposure from multiple facades. Because of the way the stairwell is designed, the spiral staircase provides a point in which the floors have the opportunity to rotate and shift. The stairwell, which is open all the way through the building, is flooded with natural light at the completely exposed penthouse level, bringing daylight to the interior of each of the three primary dwelling floors. This is a very important element of the design as the site is centrally located on the block it sits on and is surrounded by other buildings that restrict the amount of daylight which permeates from each of the vertical facades. Light even penetrates the basement level through this light shaft.

The design provides interesting insight into the possibilities of how relatively small dwellings can be inhabited. Each unit occupies three levels and an open penthouse with only about 1000 ft^2. By allowing the residents multiple levels of dwelling, different views and perspectives of the surrounding world provide a refreshing uniqueness to each space.

A number of lessons can be learned from the Shimouma 4 Houses concerning the way unique housing can exist in a dense urban residential context. Open floor plans allow current and future owners the ability to make each space their own, customizing their home to their specific lifestyle needs. A variety of sources of exterior exposure provides natural daylighting into the spaces as well as natural ventilation opportunities, using passive energy and reducing the needs for energy consumption. With its proximity to another unique residential building by the same architect, the designers had the opportunity to introduce a variety of living arrangements and to study the contextual relationship to one another in both materials, space allocation, and daylighting (JA 49).

Images:
Japan Architect. (2003, Spring). Shimouma 4 houses. Japan Architect, (49).



Simmons Hall

Steven Holl
Massachusetts Institute of
Technology (MIT)
Cambridge, Massachusetts
1992-2002
350-bed Student Residence

Simmons Hall is a 350 bed residence hall at the Massachusetts Institute of Technology, better known as MIT. The building is 10 stories tall and 330 feet long and provides a slew of amenities to students, including a theater, a night café, and a street-level dining hall. Corridors within the building are 11 feet wide, functioning more like streets with public spaces than traditional hallways.

Steven Holl's sponge concept for the building falls in line with the ideas he's developed on porosity. The building contains five large openings that act like lungs, bringing in natural light and moving air up and out. These openings engage many of the individual dwelling units within the dorm and provide a very dynamic way of connecting the interior spaces outward. Each individual bedroom also contains nine operable windows, approximately 2' x 2', and provides the inhabitants with plenty of light and environmental control.

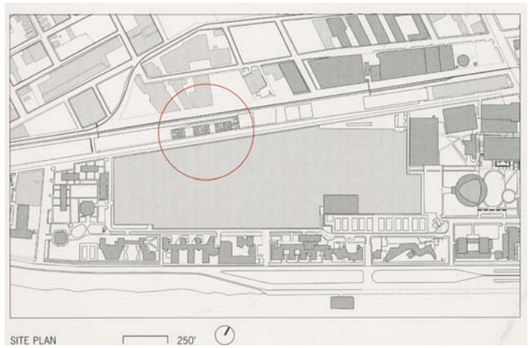
Structurally, Simmons Hall is predominantly concrete. Inside, the building is composed of a wide variety of materials, including concrete, stone, and space-specific materials. Fenestration is composed of windows approximately 2' x 2' which wrap around the majority of the building. Large oblong windows are located sporadically across the building, connecting the large "lung" openings to the exterior.

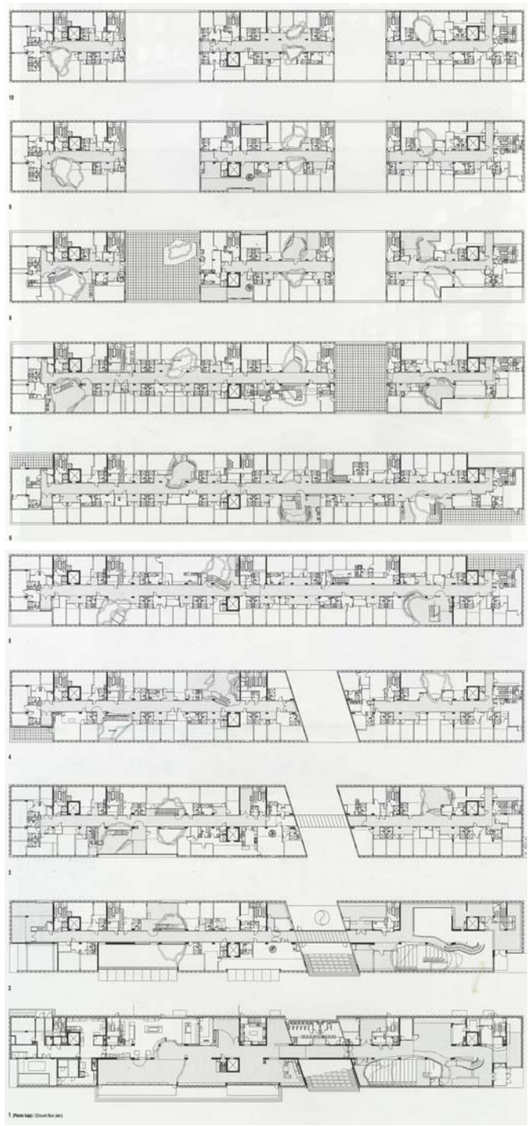
Simmons Hall is an excellent example of how a residential structure can accommodate the needs of its inhabitants on multiple levels, providing both private and social spaces.

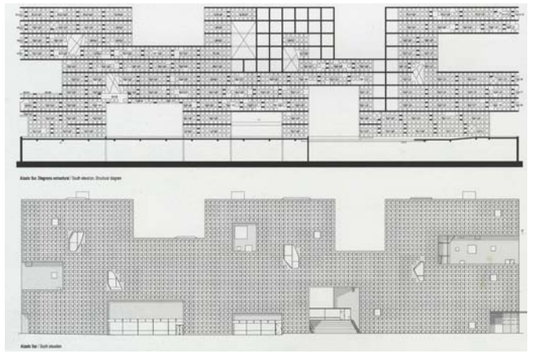
The lungs of the building are incredibly dynamic and provide the residents with a unique way to connect to the building. Light permeates through the cavernous tunnels as the lungs exchange air in the building, a sophisticated and brilliant way to naturally ventilate such a large building.

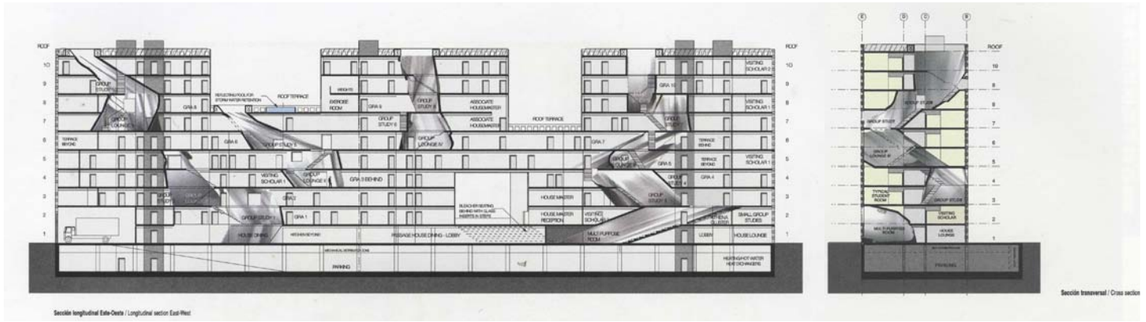
Traditional hallways are very narrow, forcing those using the space to move quickly through them. If someone encounters someone they wish to interact with in these hallways, they would more than likely feel the need to move to an open space which is more comfortable and where they wouldn't block the passage of others. Access ways within Simmons Hall serve multiple functions, as their primary purpose is not just moving people throughout the building. They promote chance encounters with one another and allow the inhabitants places to meet and gather.

There is a lot that can be learned from this Steven Holl design. By far the largest building examined, Simmons Hall is the best overall example of what I believe to be the new standard in approaching collective housing. While it is designed for students rather than families, which takes a very distinct difference in design approach than I will do, the building provides comfortable and interesting living units as well as spaces for the residents to interact on a casual level with one another. In the suburbs, there are places for people to gather on both a public and private level. Many apartments and collective housing units in urban areas have little to no spaces designated for promoting the residents and/ or public to interact with one another at a high level of comfortability.









Images:
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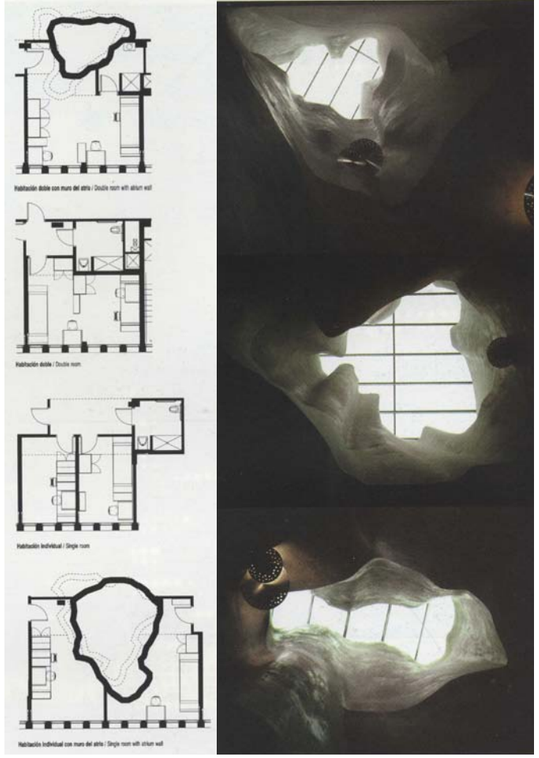
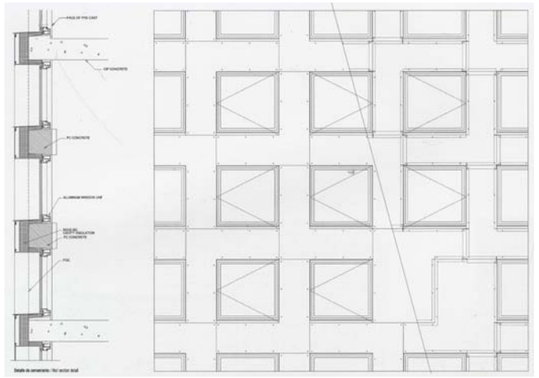
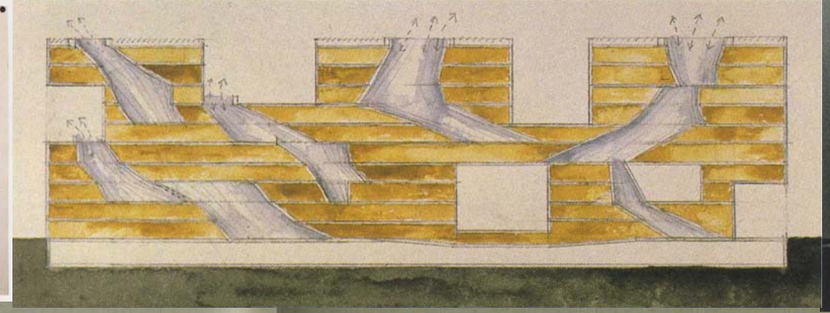
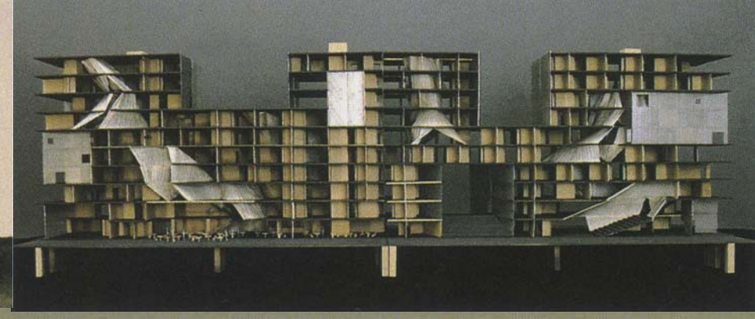
Cecilia, F., & Leven, R. (2003). *Steven holl 1986-2003*. Madrid, Spain: EL croquis editorial.


Habitación doble con muro del atrio / Double room with atrium wall
Habitación doble / Double room
Habitación individual / Single room
Habitación individual con muro del atrio / Single room with atrium wall







Loft Building at Alfonso Reyes 58

Dellekamp

Mexico City, Mexico

2003

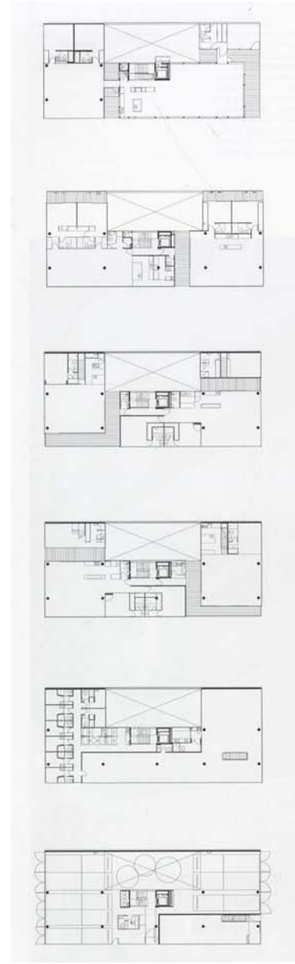
7 Apartment Units

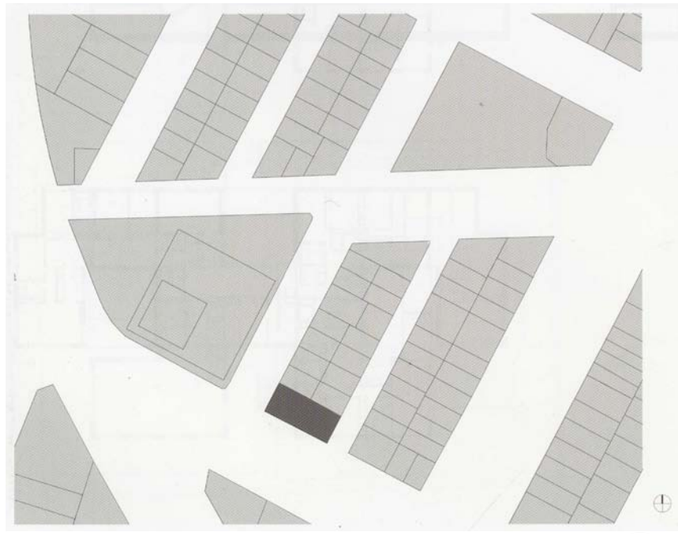
The Loft Building at Alfonso Reyes 58, Colonia Condesa, Mexcio City, Mexico is an apartment building with seven dwellings. The building lies on the southern most plot of the block which adjacent to a busy street and is six floors above ground. Parking, an interior courtyard and common space are located on the ground floor along with store and commercial spaces which are also located on the second floor. The interior courtyard spans the entire height of the building and is adjacent to each dwelling unit.

The seven flats and maisonettes, or apartments that occupy multiple levels, each have their own individual design so that an individuality exists within each space. Exterior materials emphasize this expression of individuality with a varying material palette. Within these spaces, the service rooms are located in the interior of the dwelling toward the courtyard, allowing a generous amount of southern exposure to enter each dwelling along with daylighting from the courtyard. Each dwelling also has individual exterior spaces, either terraces or loggias.

Suburban neighborhoods are often filled with houses that are designed exactly the same as numerous others within a close proximity, sometimes lined up entire blocks. The repetition of these houses provide no sense of individuality other than the way one decorates their home, in which case the architecture is providing little in the way one interacts with the space and exterior. Each of the seven apartment units are designed individually and uniquely.

Suburban middle class dwellings usually have exterior exposure on at least three sides, providing plenty of views outward and opportunities for natural daylighting. Natural daylighting is an incredibly important feature of suburban dwelling units, providing well-lit spaces throughout the home. Too often, though, suburban dwellings suffer a poor design of window fenestration and do not take full advantage of the daylighting opportunities. Dellekamp's design allows for plenty of natural light to enter the dwellings in a way particular to each unit.





Access to exterior spaces are also an important aspect of suburban dwellings. Decks and yards provide places for families, friends, and individuals to enjoy the outdoors and fresh air. Each apartment unit has access to one or more exterior space, something that I believe is an important element for any dwelling to have.

Another feature of some of the units is the opportunity for the residents to occupy multiple levels. Suburban dwellings in the United States, including detached single-family houses and town-houses, often provide spaces that occupy multiple levels, allowing the residents to expand and experience a variety of spaces, views, and perspectives.

The Loft Building at Alfonso Reyes 58 is an excellent example as to how individual, well-designed residential units can reside within the constructs of a large city. Uniqueness and creativity are abundant in the design, and the juxtaposition and relationship of interior and exterior offer the residents beautiful spaces to live in. With dwelling units that offer great exterior exposure, a variety of materials and views, private parking, exteriors spaces, and the opportunity to occupy multiple floors, this serves as a piece of residential architecture that demonstrates excellent design and relates to the ideas that I am attempting to implement in my design.

Images:
(Ebner, Herrmann, Hollbacher, Kuntscher, & Wietzorrek, 2010)

Case Study Summary

Suburban housing usually provides the occupants privacy, access to multiple levels, and outdoor spaces. The case studies researched show a wide range of collective housing design which adheres to these principles. Each case study presents a different way of working with context, form, light, and size, among other design elements. Most importantly, these case studies are great examples of how urban dwellings can provide residents with a quality place to live as an alternative to suburbia. These three case studies show us that we can redefine how inhabitants live their lives through design.

A common design emphasis in each building is the way light enters the interior. All three buildings have some sort of light shaft that brings light into spaces which would not otherwise receive any. This is achieved via the lungs in Simmons Hall, a courtyard which extends to all floors in the Mexico City Loft Building, and a central open stairwell in the Shimouma 4 Houses. Two of these buildings also provide access to outdoor spaces. Private patio spaces are implemented in the Mexico Ctiy Loft Building while an outdoor space at the penthouse level of Shimouma 4 Houses serves each of the four dwellings.

Both the Shimouma 4 Houses project and the Loft Building at Alfonso Reyes 58 have dwellings that occupy multiple levels of their structure. Suburban houses often offer a change in perspective by change(s) in elevation and the ability to view the outside at multiple facades. Also, they each have a small number of dwellings within the structures. In my project, I am not aiming for high density housing, but for an opportunity for residents to live comfortably and spaciously in an urban setting. The ability to live in a dwelling which both inhabits multiple levels and is spacious according to the average American is often reserved for suburbia.

The size of each dwelling unit of the buildings are drastically different. Of the three, individual living spaces in Simmons Hall at MIT are the smallest because they only need to accomodate student dormatories. In this case, the community spaces are much more interesting to me. Suburban communities have parks and dwellings have individual yards which allow for friends and neighbors to gather and interact with one another. The oversized hallways provide places for those moving through the building to gather and interact with one another comfortably, while its mixed-use program presents spaces for those who don't live in the building to use and mingle with both inhabitants and others in the community. The Shimouma 4 Houses are only approximately 1000 ft^2 but the undefined floor plans allow the inhabitants to decide the best use for each space. A variety of different-sized dwelling units are presented in the Loft Building at Alfonso Reyes 58, which follows most closely what I want to acheive in my design.

The success of this thesis will depend on how the program accomodates the needs of the inhabitants and the greater community alike. Each case study has important design features related to the typology of collective housing in an urban environment. All three buildings were located on a distinct site, each one relating to elements of my chosen site. Finding ways in which to incorporate the succesful elements of these contextual relationships, like bringing in light while maintaining privacy and providing spaces which promote community interaction, will be crucial to the final design of my building.

Thesis Goals

This thesis is my first opportunity to take an entire project by the reigns, conducting all research and making all of the crucial decisions throughout the design process. Because this is unlikely to happen again in my career as an architect, this project provides me with a rare opportunity to conduct both research and design work in the world of architecture with complete artistic control. Since anyone has access to this document, and thesis projects are used for research by academics, professionals and individuals alike, the document must contain clear, concise and effective research. Goals for this project fall into three different levels: academic, professional, and personal.

Academically, I hope the project reflects the knowledge I have acquired in the field of architecture as a student at North Dakota State University. Students, professors, and professionals alike should be able to review this document and use it as a reference for studies of their own. This project should be a reflection of the work I have put into my studies as a student and should operate as reminder of my interests in architecture that I have acquired over the course of my education. In order for this project to be successful I am striving to develop a project that fulfills the thesis requirements set forth by the thesis committee. I must also take critiques by fellow students, professors, and professionals to heart in order for personal and academic growth to occur.

Professionaly, the thesis project stands as a testament of my entry into the professional realm of architecture. Professionals will be able to use the information presented in their own research. Potential employers have the ability to draw conclusions from my work regarding professionalism in research, theory, and design. The project incorporates design elements and principles which are important to professional practice at a high level.

Finally, I have a number of personal goals for this project. I hope that the project catches and holds the attention of those who encounter it. This project has been derived from my interest in the way people live their lives and interact with the world around them. Hopefully my interest and knowledge of these subjects resonates in the text and design.

The project will also expand my knowledge in the fields of architecture and urban design. This knowledge should be synthesized with my research on topics outside of the direct field of architecture to produce a holistic approach to my design solution. I hope to refine my skills as a designer and writer which I will use as a professional. This includes my skills in sketching, researching, thinking, and modeling.

Above all, I hope to make myself and family proud of my accomplishments as a student at NDSU. After all is said and done, I hope the project meets and exceeds the standards set by the thesis committee and earns me the right to obtain my Master of Architecture degree from North Dakota State University.

Site Analysis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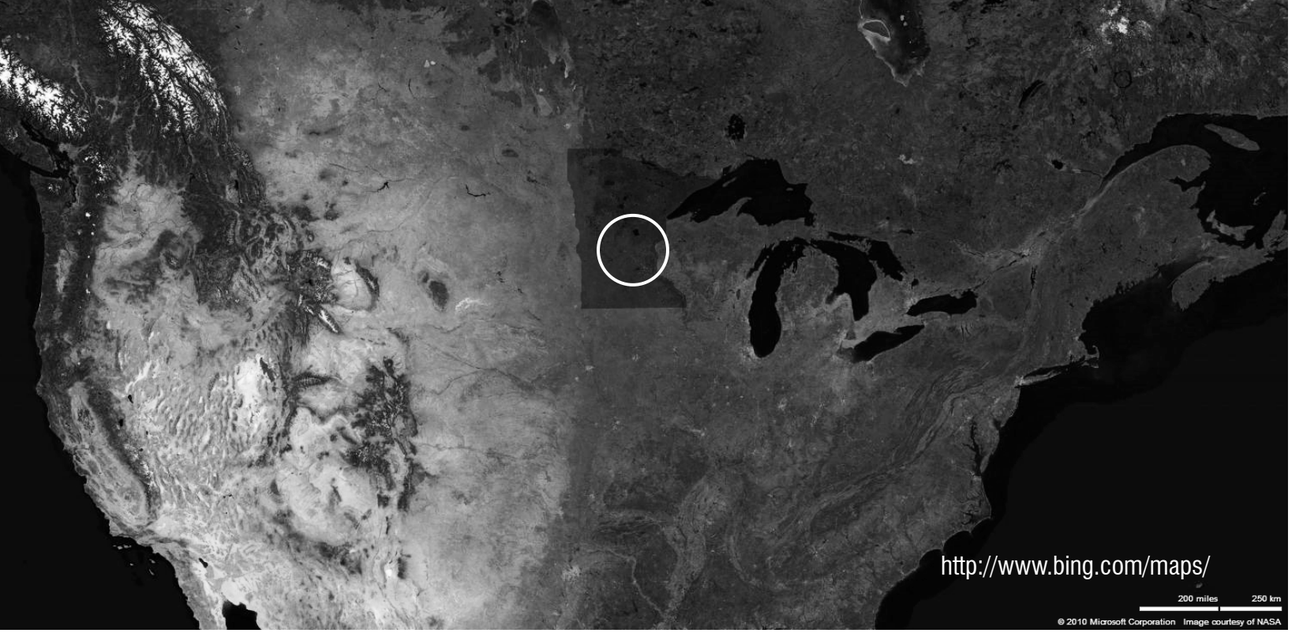
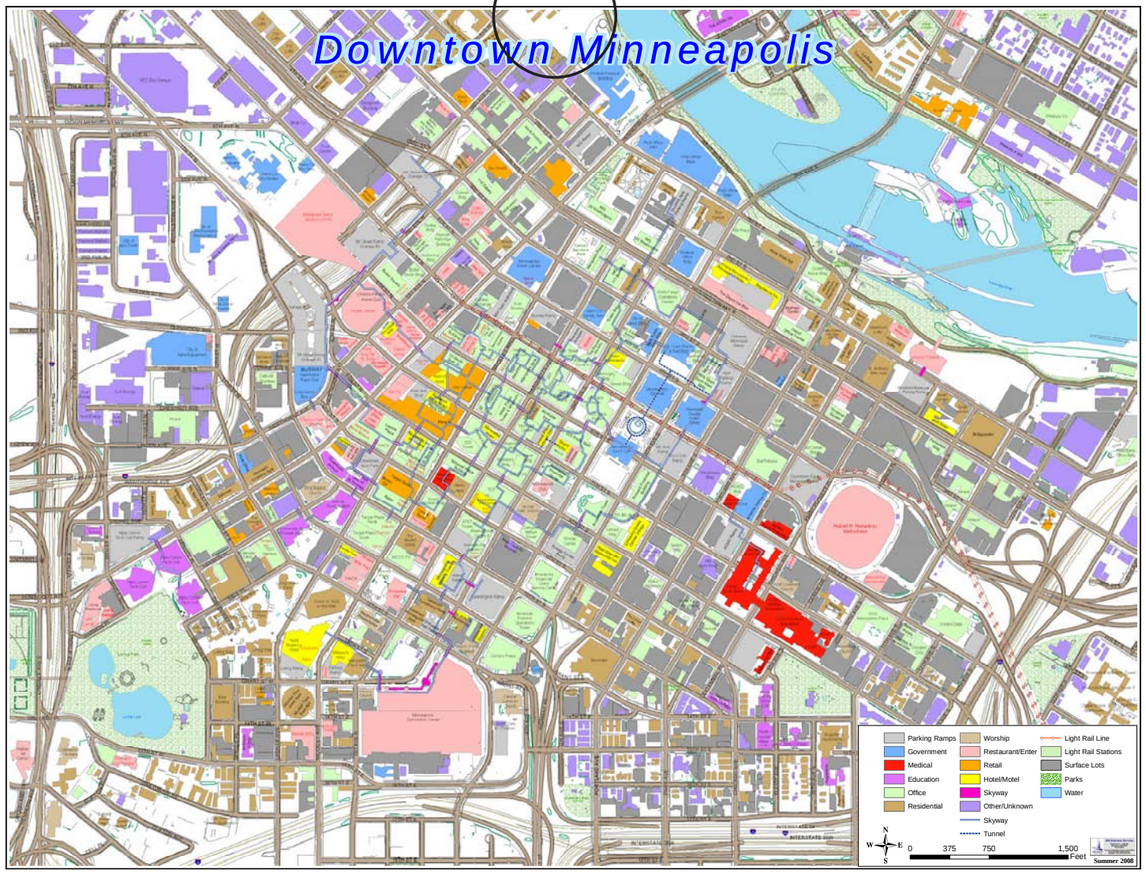
http://www.bing.com/maps/



As I drive southbound on I-35W heading to Minneapolis from my home in Lino Lakes, suburbia surrounds me. I pass countless gas stations, fast food restaurants, strip malls and even a used car lot. Housing developments are predominantly out of sight, either hidden behind barrier walls dividing the single-family home neighborhoods from the freeway or existing beyond the view from the freeway. As I reach St. Anthony the straight path takes a sharp turn to the right, taking me down only to bring me back up again over Industrial Blvd. The skyscrapers of Minneapolis begin to creep into sight as I reach my apex until the beautiful skyline of Minneapolis is revealed to me. While this moment takes only seconds, every time I approach the city the same feeling of anxiety fills my body. A rush of energy and appreciation overwhelms me as I continue my journey to my favorite city. At this point traffic begins to pick up and everyone around me seems to be in rush, driving at least 10 miles over the posted speed limit.

When I reach downtown, I need to find a place to park. I pass a number of lots with available parking spaces, refusing to pay as much as $30 for only a few hours of my time. After I finally park and step outside into the brisk Minnesota air, I am immediately taken back. I expect to walk into a crowd of people as it's a workday, but I'm surprised to be greeted by very few fellow pedestrians. After spending time recently in Chicago, San Francisco, and various cities in Japan where the streets are always flooded with people, the approach to my site seems more like walking through a suburban neighborhood than an urban metropolis. The streets around me are congested with people driving around the city rather than walking through them, a stark difference from what I had recently become accustomed to in Tokyo and Kyoto.

As I reach my site at the end of 2nd Ave., a certain serenity comes over me. While the existing condition of my site is a sea of automobiles, the adjacent site of the beautiful Federal Reserve Building draws me in and guides me toward the river. When I reach the end of the winding path I am greeted by a rare site, a piece of sculpture, reminding me of the many sculptures existing outside of buildings throughout Japan. I take a moment to enjoy my surrounding, studying the Mighty Mississippi and the island which it surrounds. I only have a moment to do so because of the amount of work that I have to conduct in the area before I have to leave and try to avoid the rush hour traffic that comes in the evening.



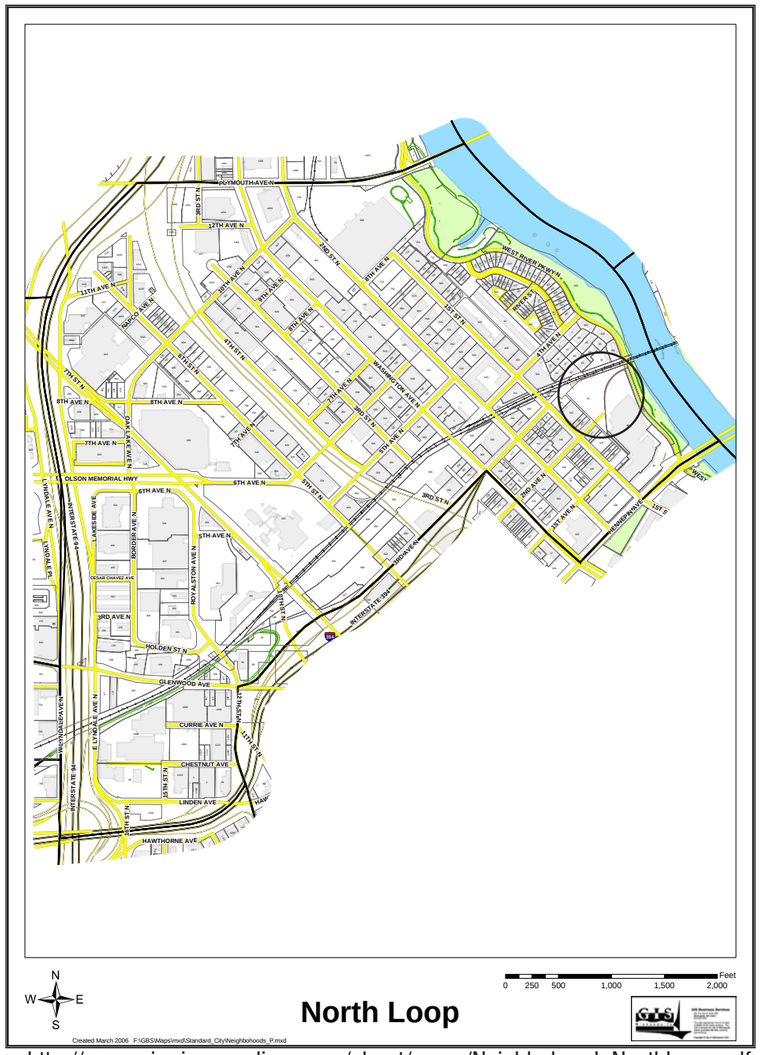
http://www.ci.minneapolis.mn.us/about/maps/downtown.pdf

My thesis site is located in the historic Warehouse District of Minneapolis, an area Larry Millet, author of the *AIA Guide to Downtown Minneapolis,* calls “one of the city’s most desirable places to live, work, and play” (Millett, 2010 pg. 46). The district is currently hosting a great deal of economic activity. The majority of the neighborhood lies within national and local preservation districts and was the site of a number of very successful industrial warehouses.

Development of the area took off with the introduction of rail lines in 1897. Sawmills, saloons, and wholesale manufacturing firms were prominent in the area, which still boasts many of its original brick buildings. These historic buildings were primarily constructed between 1885 and 1920 and are known to be well designed, many by local Minneapolis firms.

The district missed many of the attempts at urban renewal during the 50s and 60s and has now become reborn. A great deal of preservation is currently happening in the area as well as plenty of new construction. Local attractions are abundant in the area, which is a center of activity in the Twin Cities. The recently constructed Target Field, Target Center, and State Theater are just a few important buildings in the area. The Warehouse District is also located near the Central Core area of Minneapolis, which is the heart of the downtown area. This region contains the majority of the downtown high rises along with other important buildings like the new Minneapolis Central Library and Nicollet Mall.

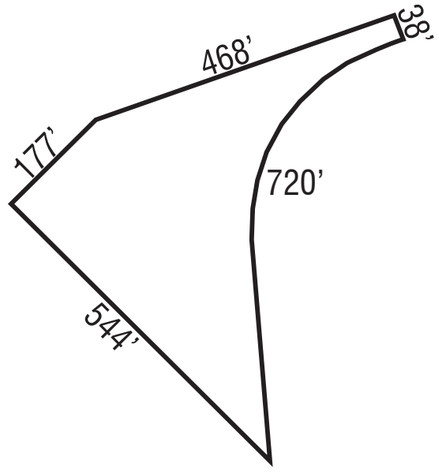
A variety of residential buildings are scattered throughout the Warehouse District with a mix of preserved renovations and newly-constructed lofts. Millet sates, “Most of this new architecture is of the inoffensive brick box variety, although edgier buildings... embrace a more modern look” (Millett, 2010 pg. 46). He goes on, saying, “When the housing bubble finally burst in 2007, it doused the district’s super-hot-condominium market, and there’s unlikely to be much new construction for years to come” (Millett, 2010 pg. 46). While the economic struggles in America, along with many nations of the world, have definitely affected the housing market, there are a number of people who are taking advantage of the lower housing costs by investing in a new home.



http://www.ci.minneapolis.mn.us/about/maps/Neighbohood_NorthLoop.pdf

SITE INFORMATION

Address: Address: 24 2nd Ave. N.
Minneapolis, MN 55401
PID: 2202924140634
Current Owner: Regional Railroad Authority
Property Type: Land Commercial Preferred
Homestead: Non-Homestead
Zoning: C3A Community Activity
Center District
Area: 131,418 ft²
3.02 acres
FAR: 2.7



The site is located on the Mississippi River, on the corner of 1st St. N and 2nd Ave. N. The site is bound by HOK's recently constructed Federal Reserve Bank to the southeast, West River Pkwy to the northeast, the 888 Northstar Commuter Rail is adjacent to the northwest, and a cluster of brick commercial buildings sit to the southwest. The Mississippi River runs just to the north and east of the site as well.

I chose the site for a number of reasons over other potential sites in Minneapolis. Currently a parking lot sits on the site, allowing a structure to be built without having to tear down any existing buildings. The site's close proximity to the river allows the inhabitants and users of the structure to enjoy a water feature, abundant in Minnesota and often a highly desired residential element. There are also a number of ways to access the site. Vehicular access is available via 2nd Ave. N and is located at the end of the road. This entrance is an excellent feature to offer residents as many suburban dwellings have private or semi-private access. It also offers an additional safety feature as those who have no use for the building will tend to stay away. As stated above, the site is adjacent to the 888 Northstar Commuter Rail. The Northstar line is a newly finished railway which implemented existing railroad tracks and connects Minneapolis, at Target Field, to Big Lake, Minnesota, which is near St. Cloud. Between Big Lake and Target Field, stations are located in the suburbs of Fridley, Coon Rapids, Anoka, and Elk River, offering commuters an excellent alternative source of transportation to the suburbs. Bus route 7 runs along 1st St. N and there is a stop near the site on the corner of 1st St. N and 2nd Ave. N., providing the citizens and users a convenient way to move through the city without the need of a car.

The site is zoned as C3A, a community activity center district for commercial property, and is not sanctioned as a homestead property. I intentionally chose a site that has been zoned to disallow dwelling units to question the current zoning regulations that are in place. Opposite of the rail lines lies a cluster of residential townhomes. This type of housing, while it works well in this neighborhood, is also a problem in the current development of American residential neighborhoods because of its monotony and lack of quality design. With the site's location on a plot of land zoned to disallow dwellings along with its close proximity to what I find to be poor residential design, I have provided myself the opportunity to design a new type of residential building that stands in contrast to these conventions.

In order to develop a piece of architecture that has the feeling of a suburban dwelling that successfully exists in an urban area, all of the essential places for human life must be within close proximity of the building. Local entertainment, shopping centers, and commercial buildings are all very close to the site and are accessible from the available means of local transportation. The proper balance of transportation, industry, and safety required for my hopes of urban density are all attainable from the chosen site.

Site Views

View of the site from the end of 2nd Ave. N

View from the end of 2nd Ave. N

View of the corner of 1st St. N and 2nd Ave. N

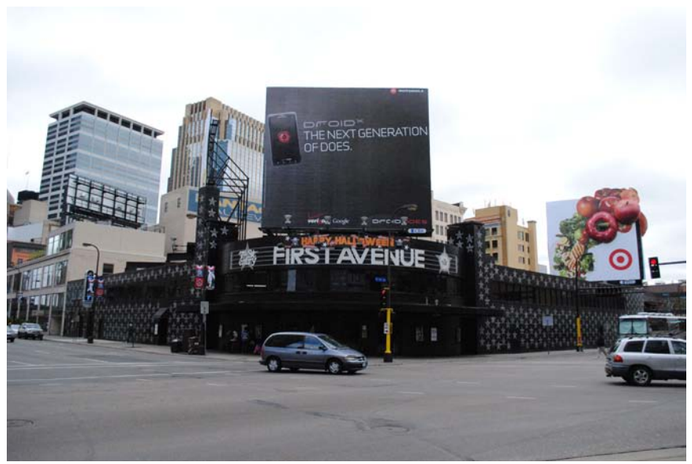
Local Architecture

Federal Reserve Building

Marquette Plaza

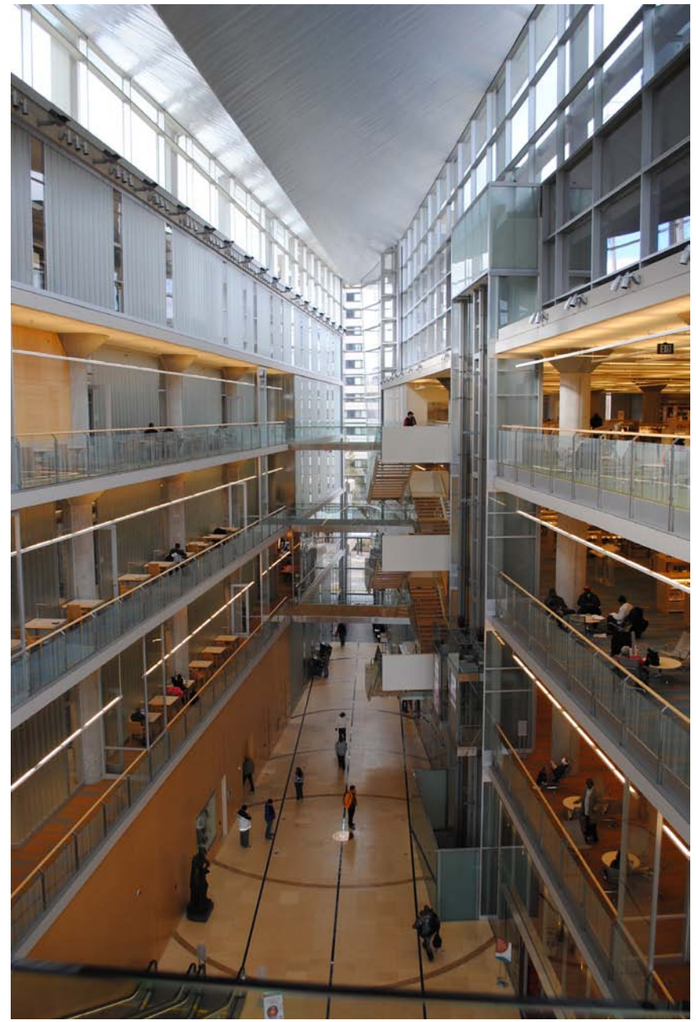
ING 20 Washington

IDS Center



First Avenue and 7th St. Entry

Minneapolis Central Library

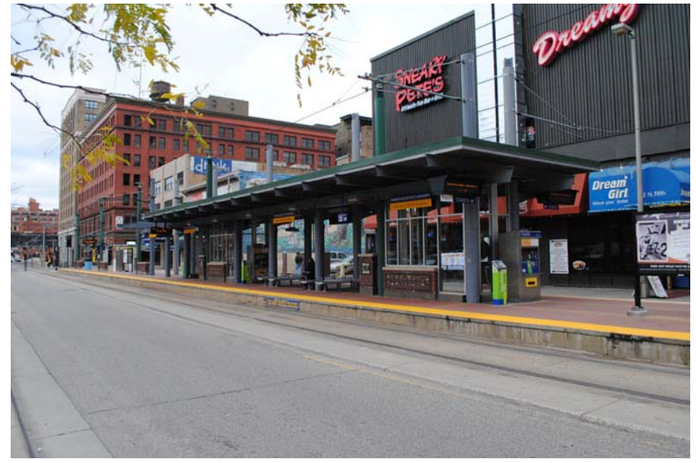


Lumber Exchange

Masonic Temple

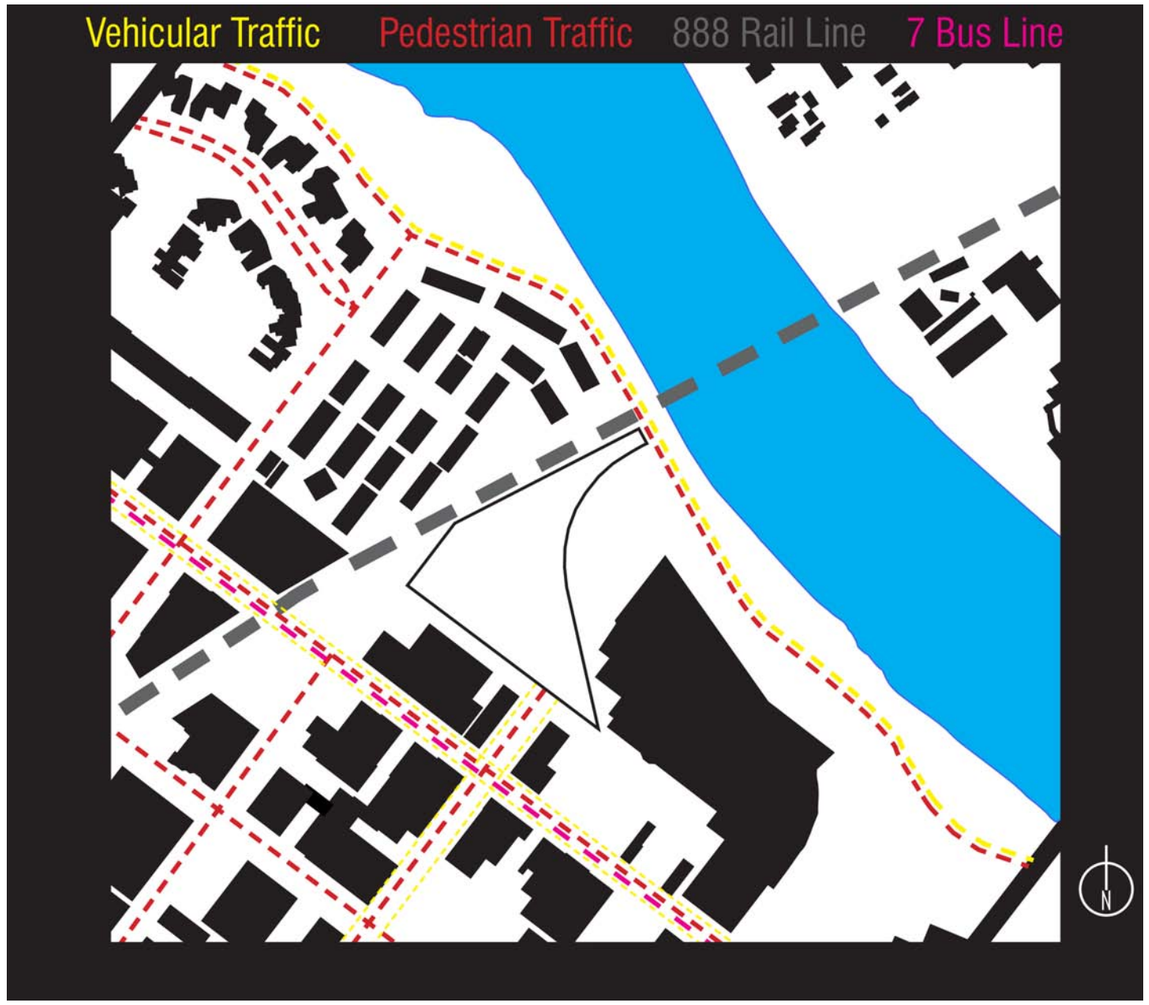
Target Field

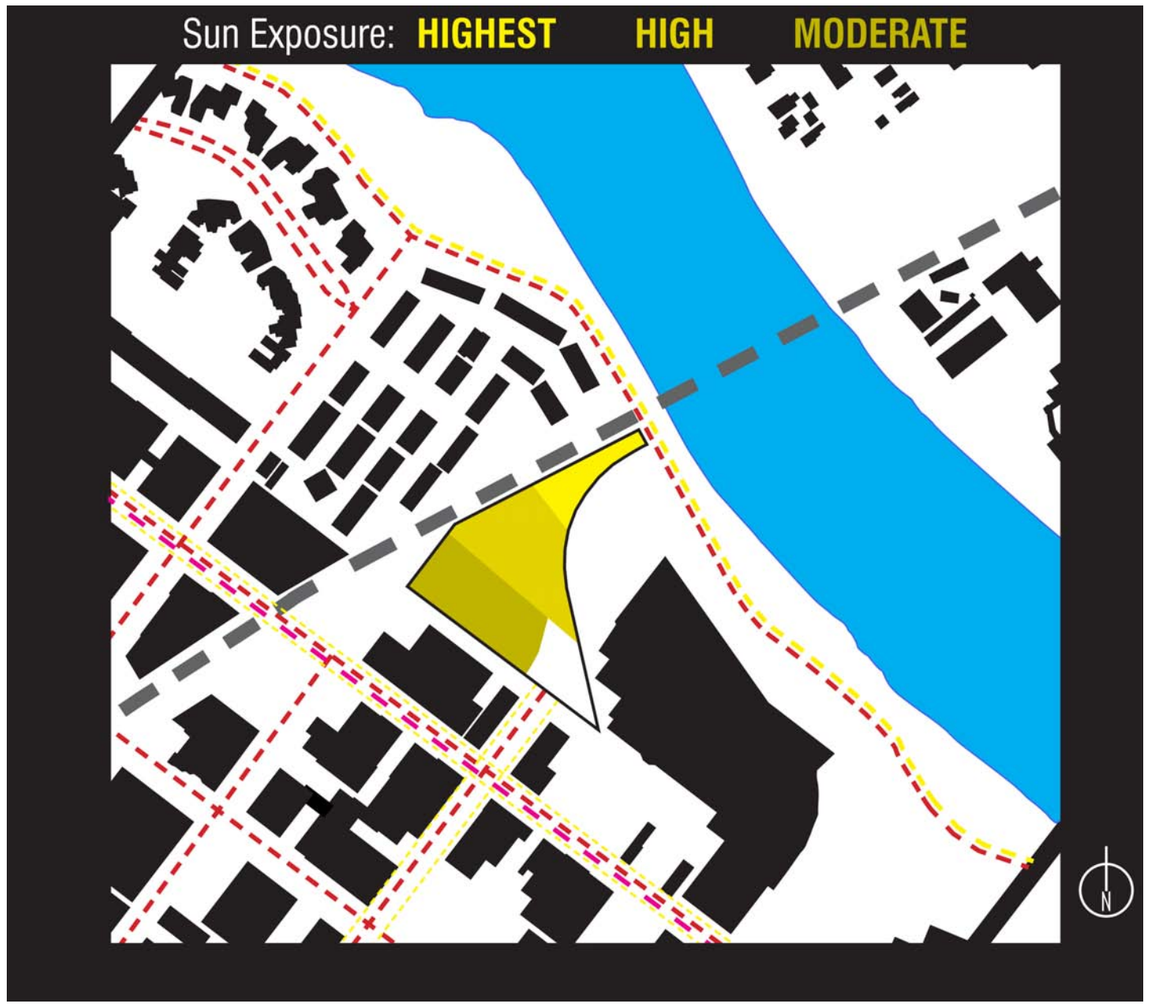
Target Center



Light Rail Station


Figure / Ground
N


Vehicular Traffic
Pedestrian Traffic
888 Rail Line
7 Bus Line
N


Sun Exposure: HIGHEST HIGH MODERATE
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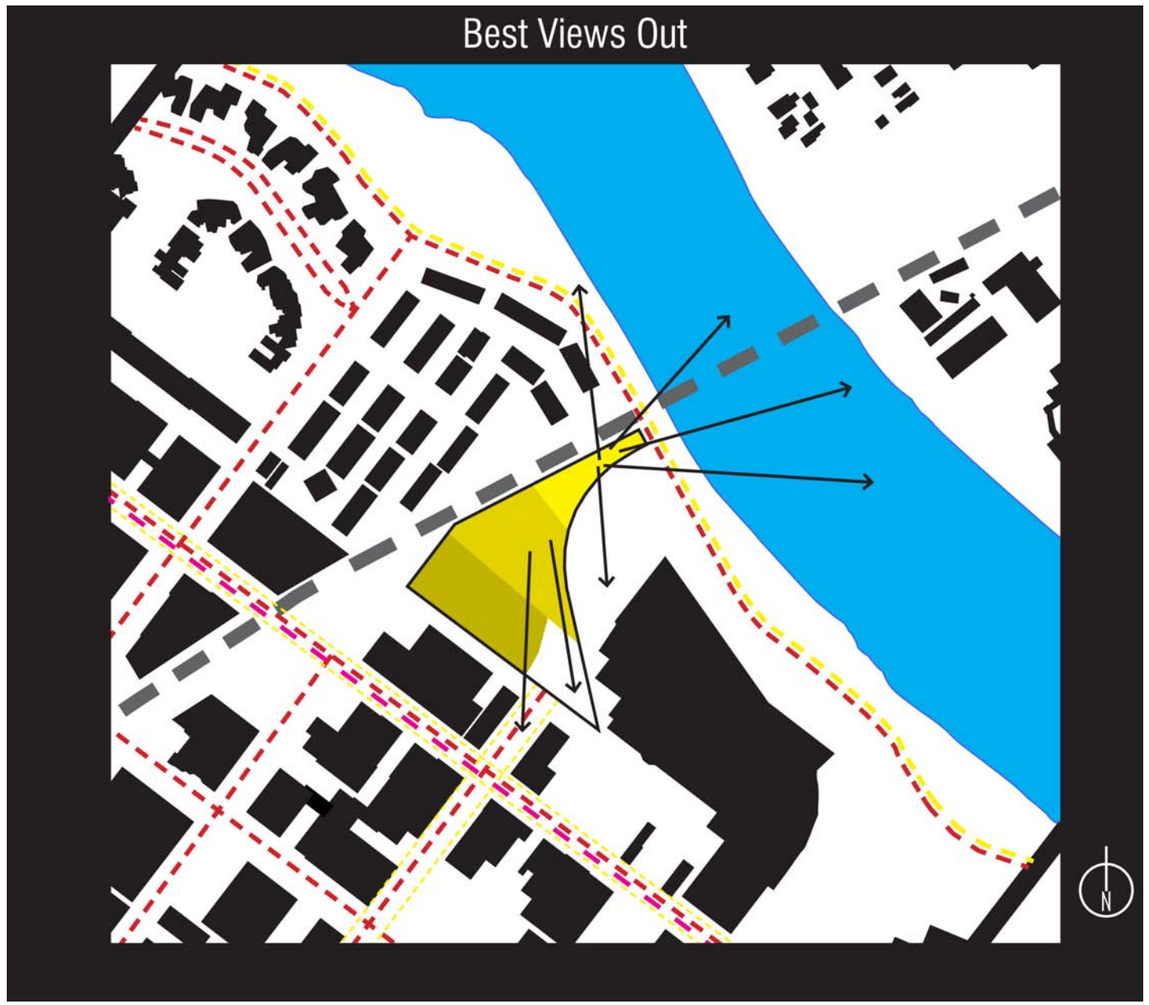
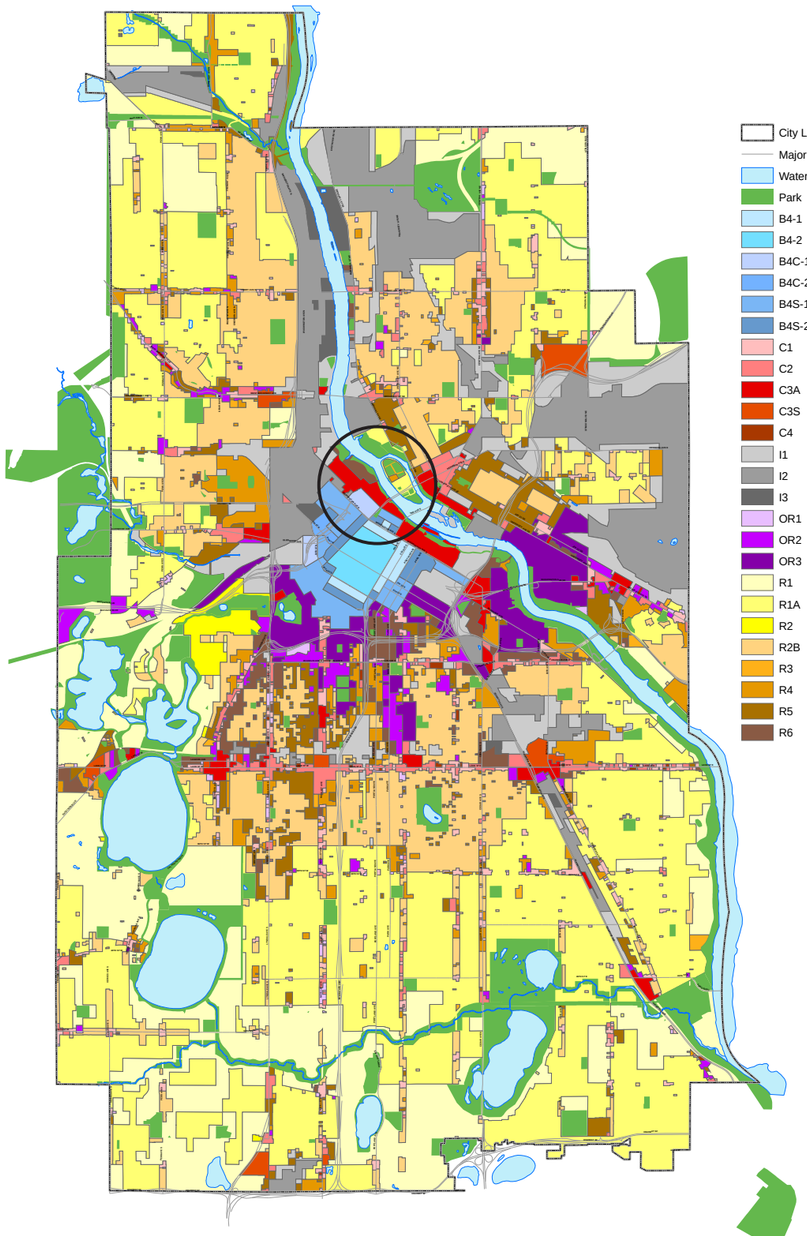

Best Views Out
N

Primary Zoning Districts



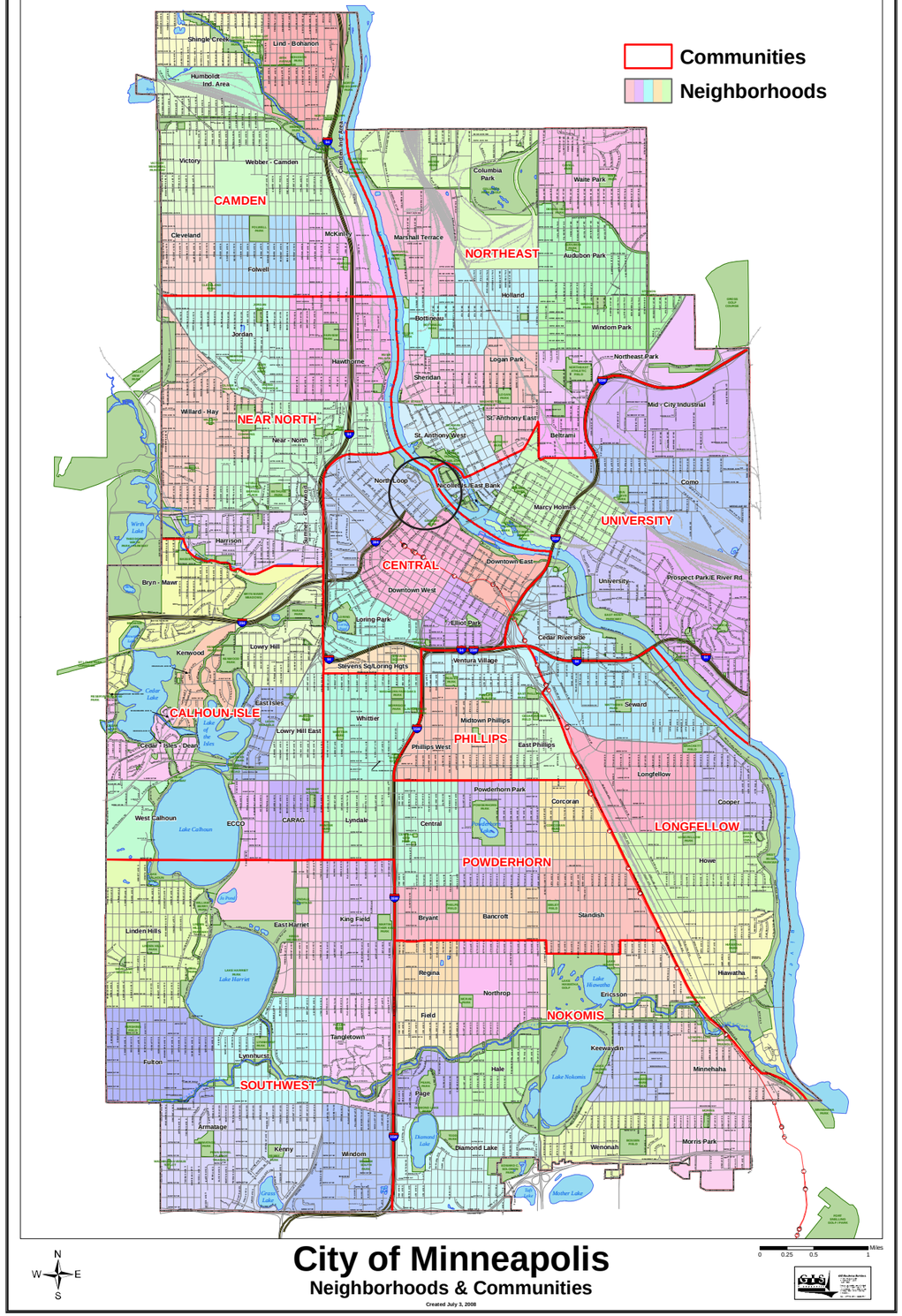
City of Minneapolis

Community Planning and Economic Development - Planning Division

Data compiled from best available sources. The City of Minneapolis assumes no legal responsibility for the accuracy of this map. For illustrative purposes only.

Last amended: December 18, 2009

http://www.ci.minneapolis.mn.us/about/maps/Zoning_CityWide_D.pdf



City of Minneapolis

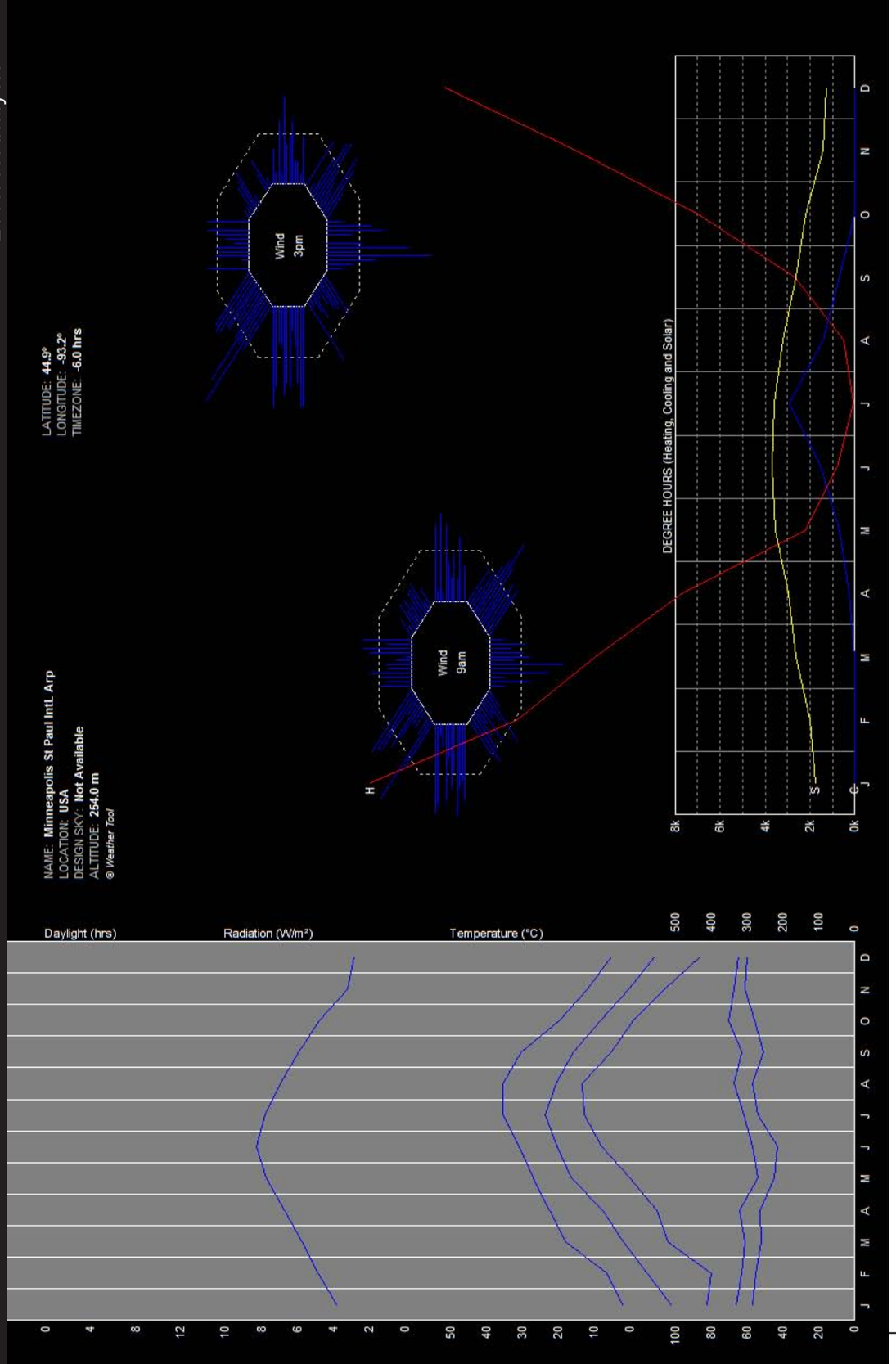
Neighborhoods & Communities

Created July 3, 2008

http://www.ci.minneapolis.mn.us/about/maps/neighborhoods.pdf

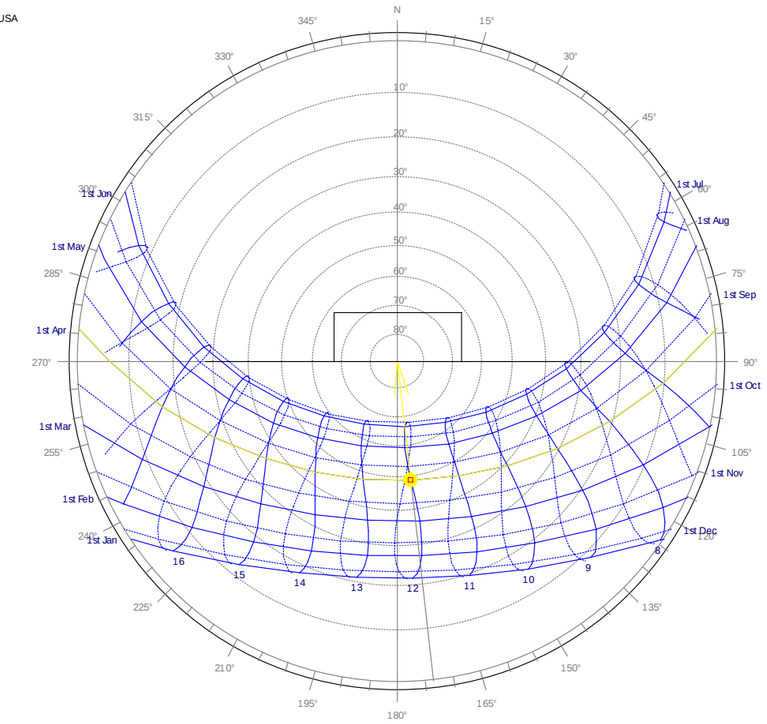
Weather Information

-Ecotect Analysis



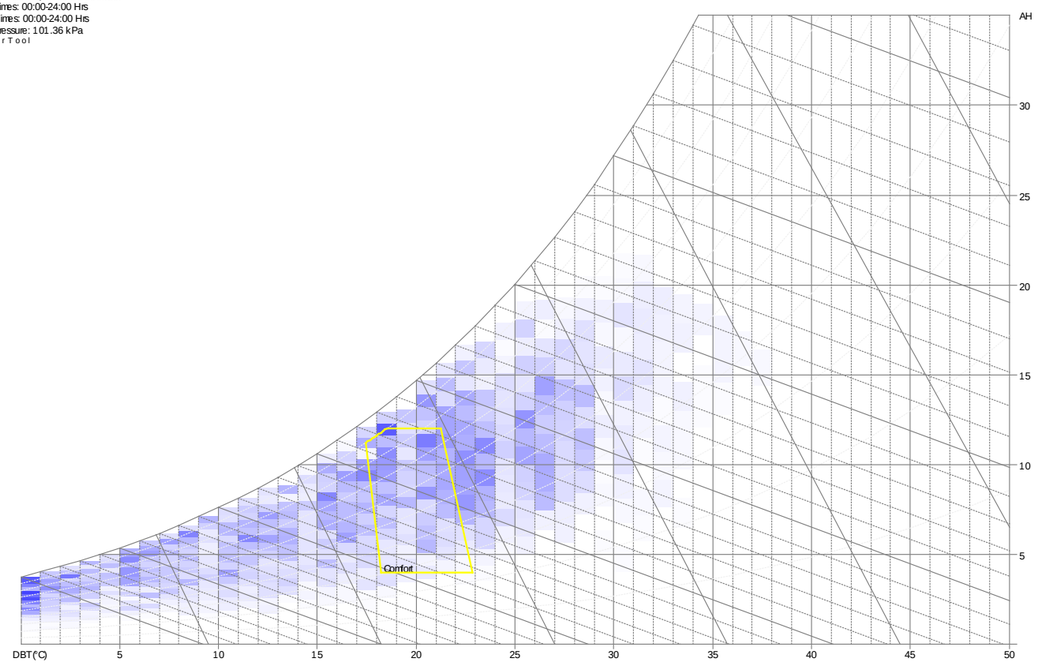
Stereographic Diagram

Location: Minneapolis St Paul IntL Arp, USA
Sun Position: 173.6°, 49.0°
HSA: 173.6°, VSA: 130.8°
© Weather Tool



Psychrometric Chart

Location: Minneapolis St Paul IntL Arp, USA
Frequency: 1st January to 31st December
Weekday Times: 00:00-24:00 Hrs
Weekend Times: 00:00-24:00 Hrs
Barometric Pressure: 101.36 kPa
© Weather Tool



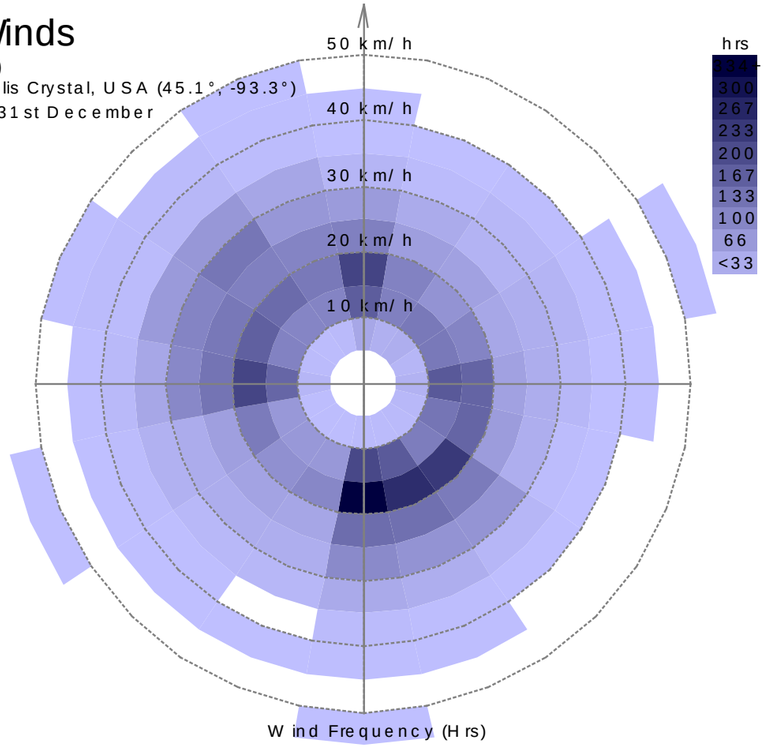
Prevailing Winds

Average Rainfall (mm)

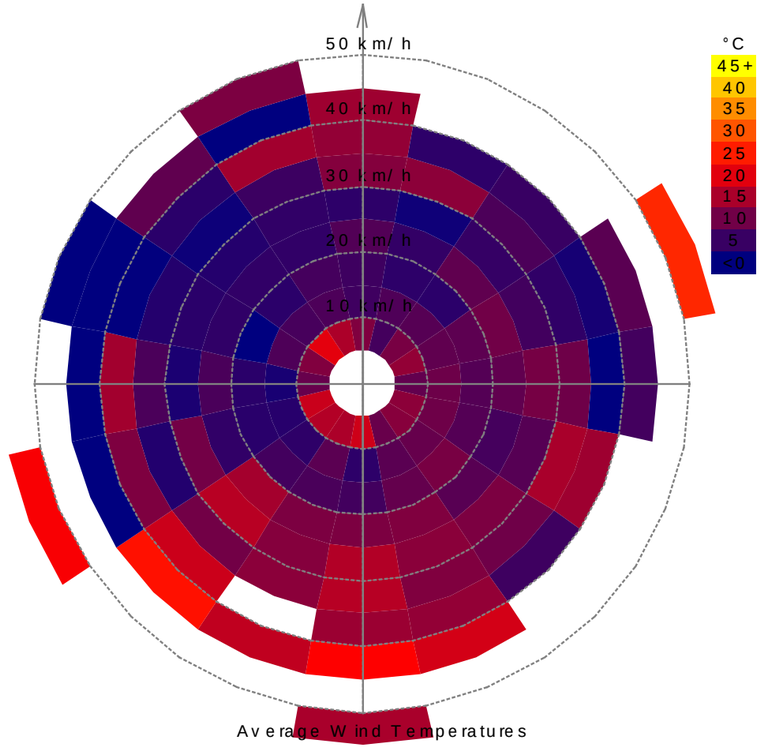
Location: Minneapolis Crystal, USA (45.1°, -93.3°)

Date: 1st January - 31st December

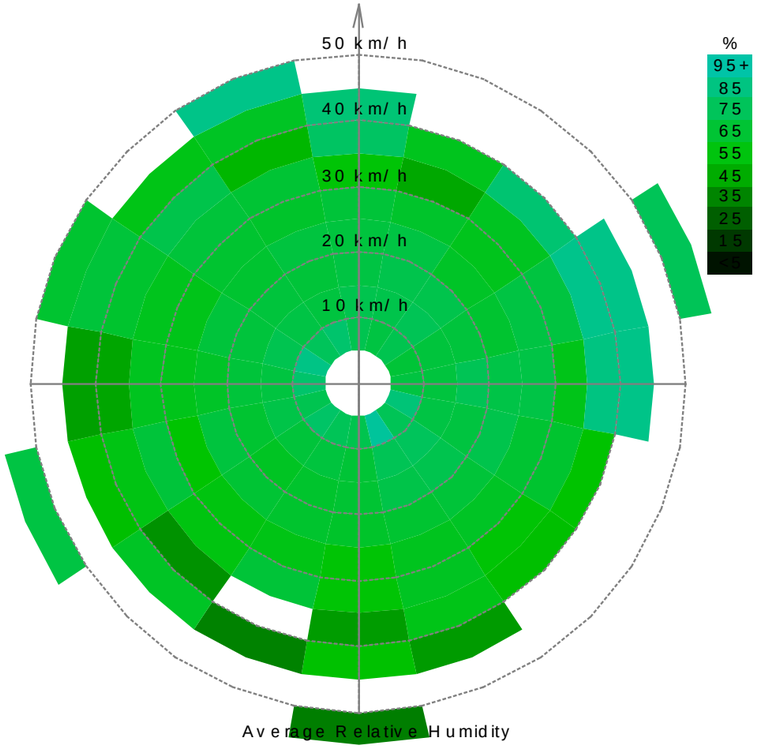
Time: 00:00 - 24:00



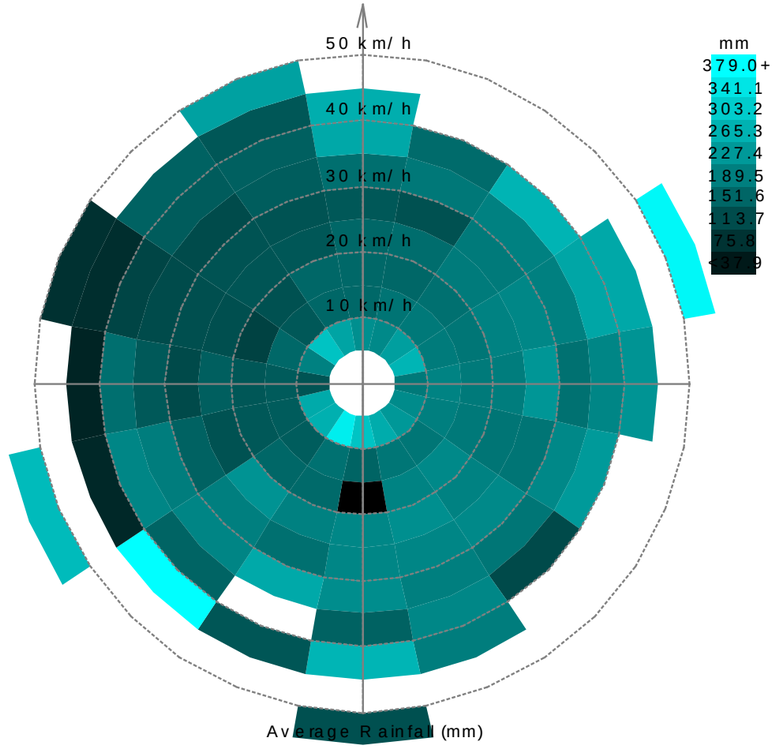
Wind Frequency (Hrs)



Average Wind Temperatures



Average Relative Humidity



Average Rainfall (mm)

Programmatic Requirements

no. 24, Minneapolis

DWELLINGS

4 Bedroom (2 x 2,400 ft²)	4,800 ft²
3 Bedroom (5 x 2,050 ft²)	10,250 ft²
2 Bedroom (5 x 1,700 ft²)	8,500 ft²
1 Bedroom (4 x 1,350 ft²)	5,400 ft²
Studio (4 x 1,000 ft²)	4,000 ft²
	32,950 ft²

RETAIL SPACE

3 x 10,000 ft²	30,000 ft²

GREEN SPACES

Private (20 x 1,000 ft²)	20,000 ft²
Semi-Private (4 x 10,000 ft²)	40,000 ft²
	60,000 ft²

PARKING

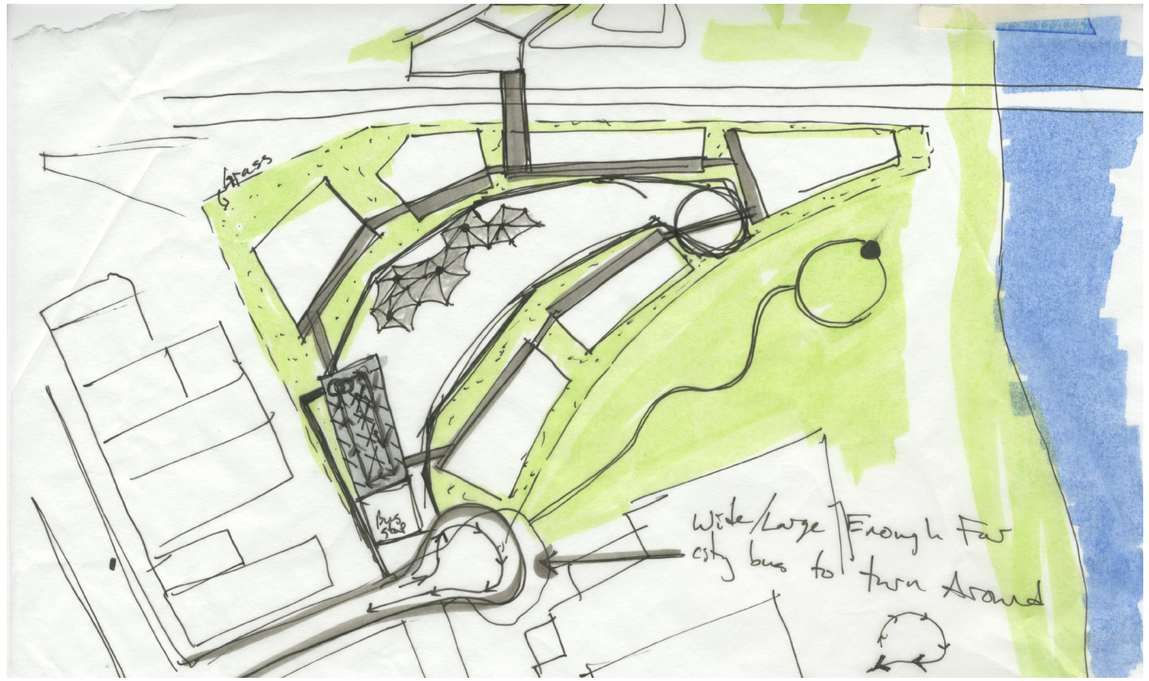
	4,000 ft²
Private (20 x 200 ft²)	20,000 ft²
1 x 20,000 ft²	24,000 ft²

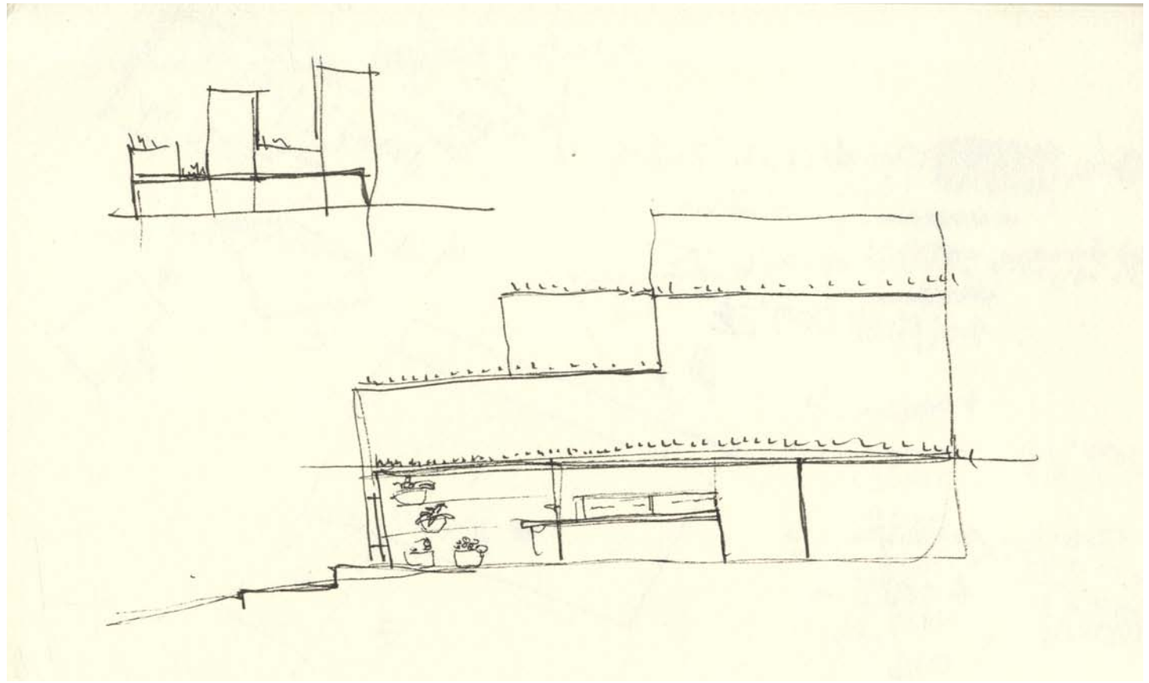
TRAIN TERMINAL

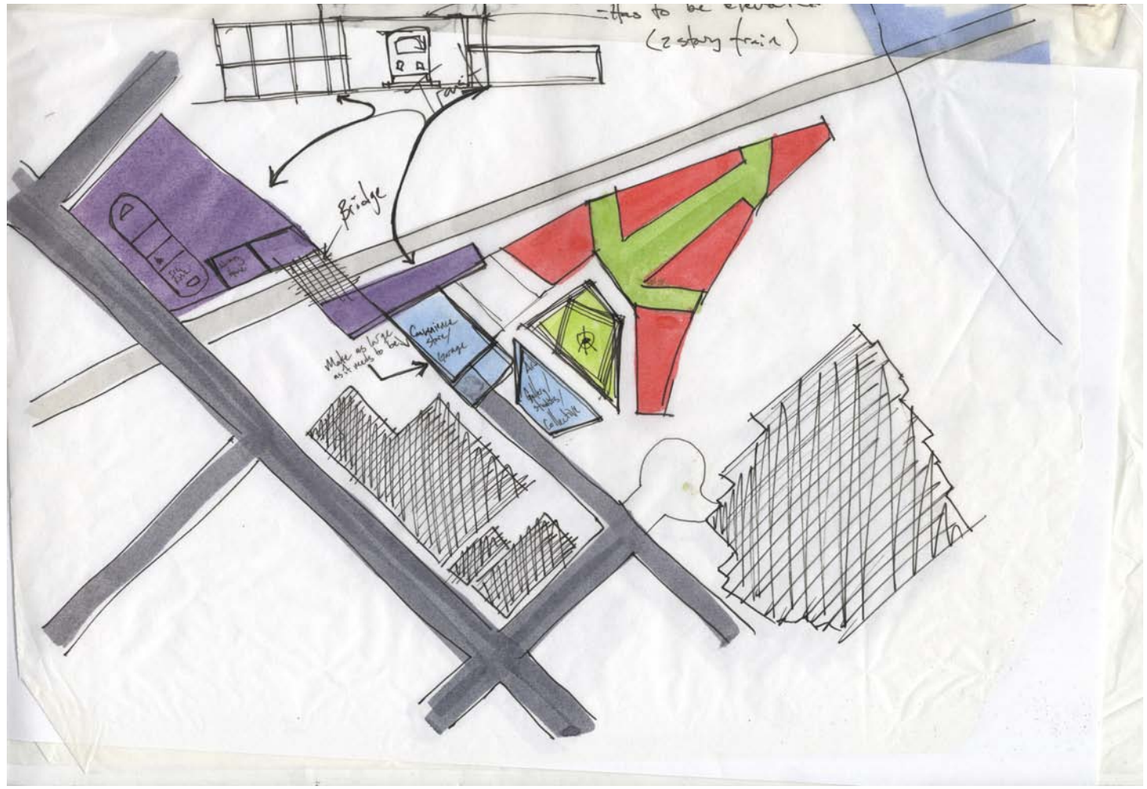
	15,000 ft²
1 x 15,000 ft²	

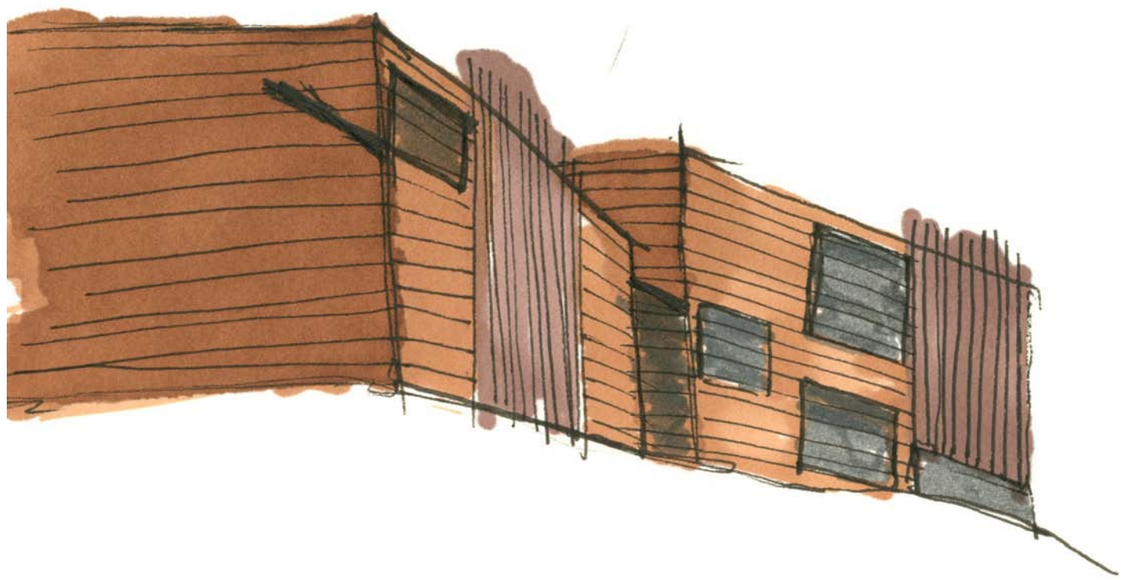
	161,950 ft²
TOTAL	

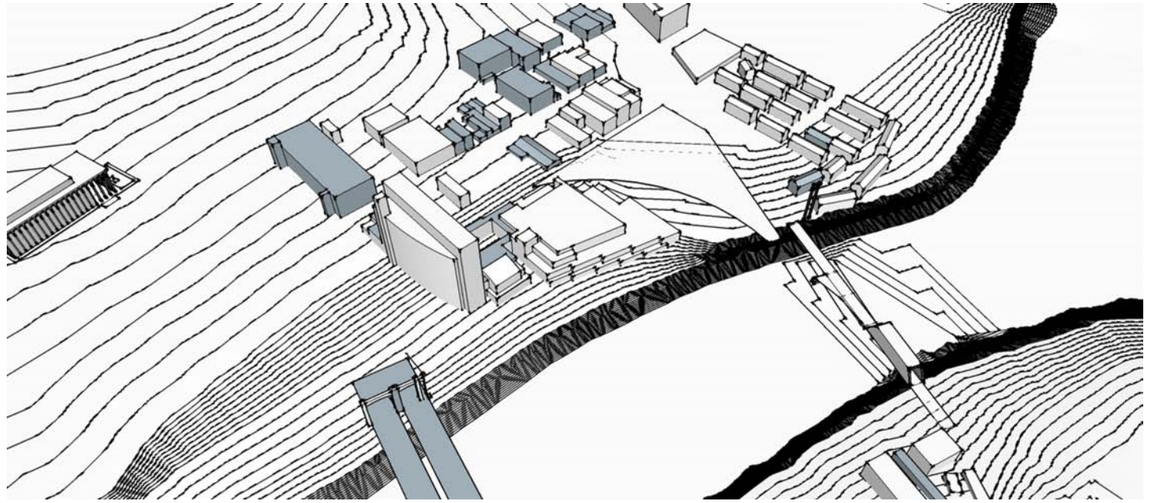
Design Phase

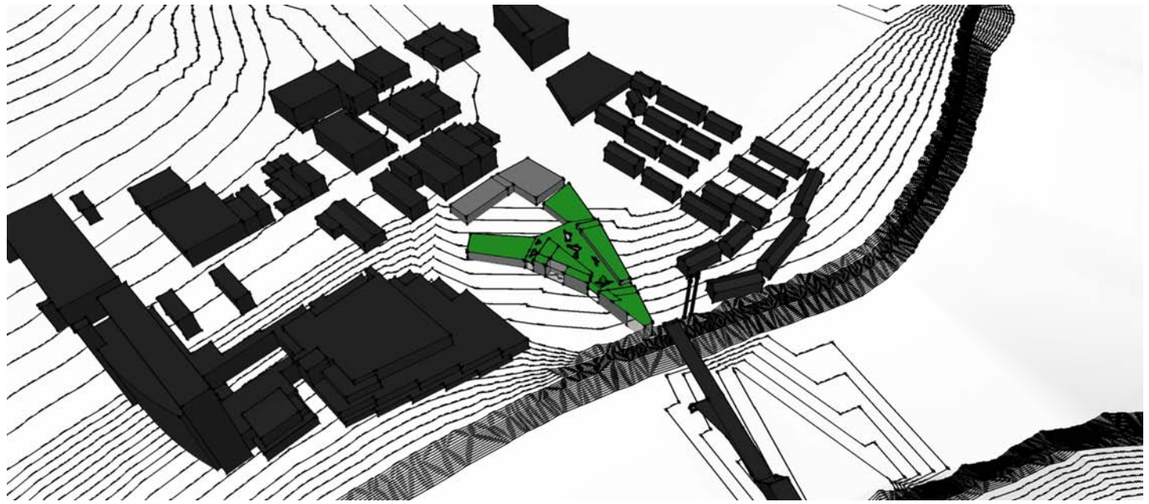


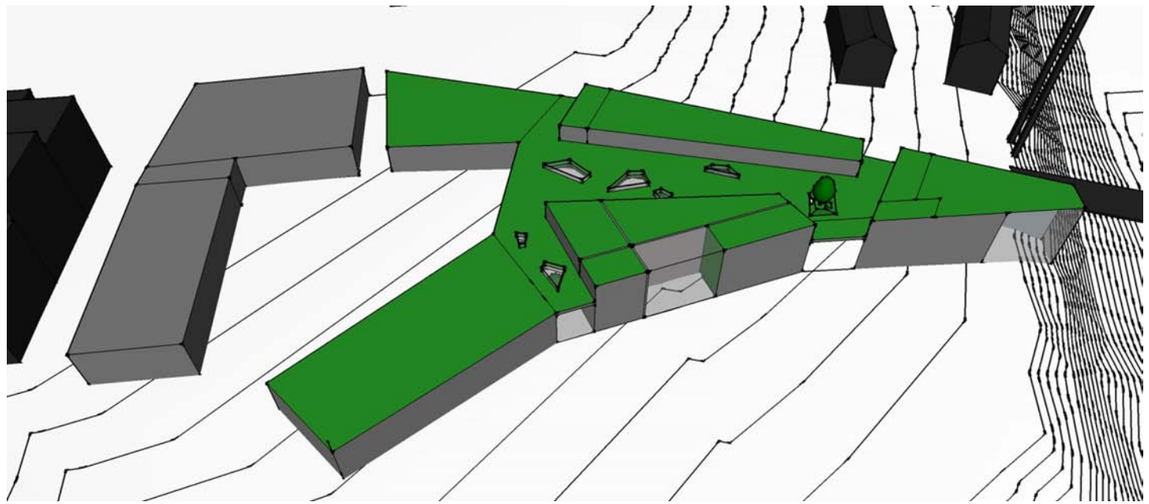


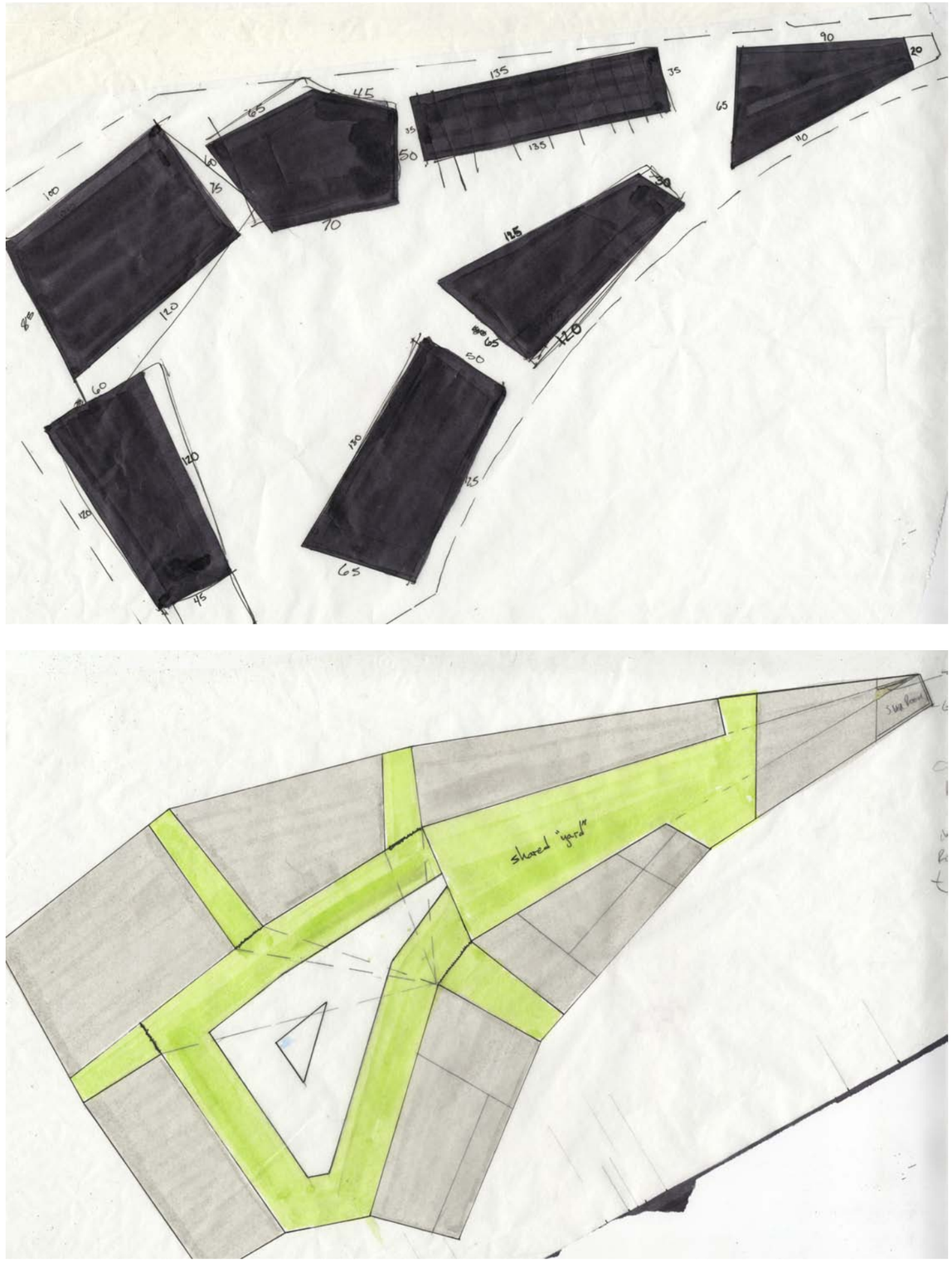

(2 story train)
Bridge

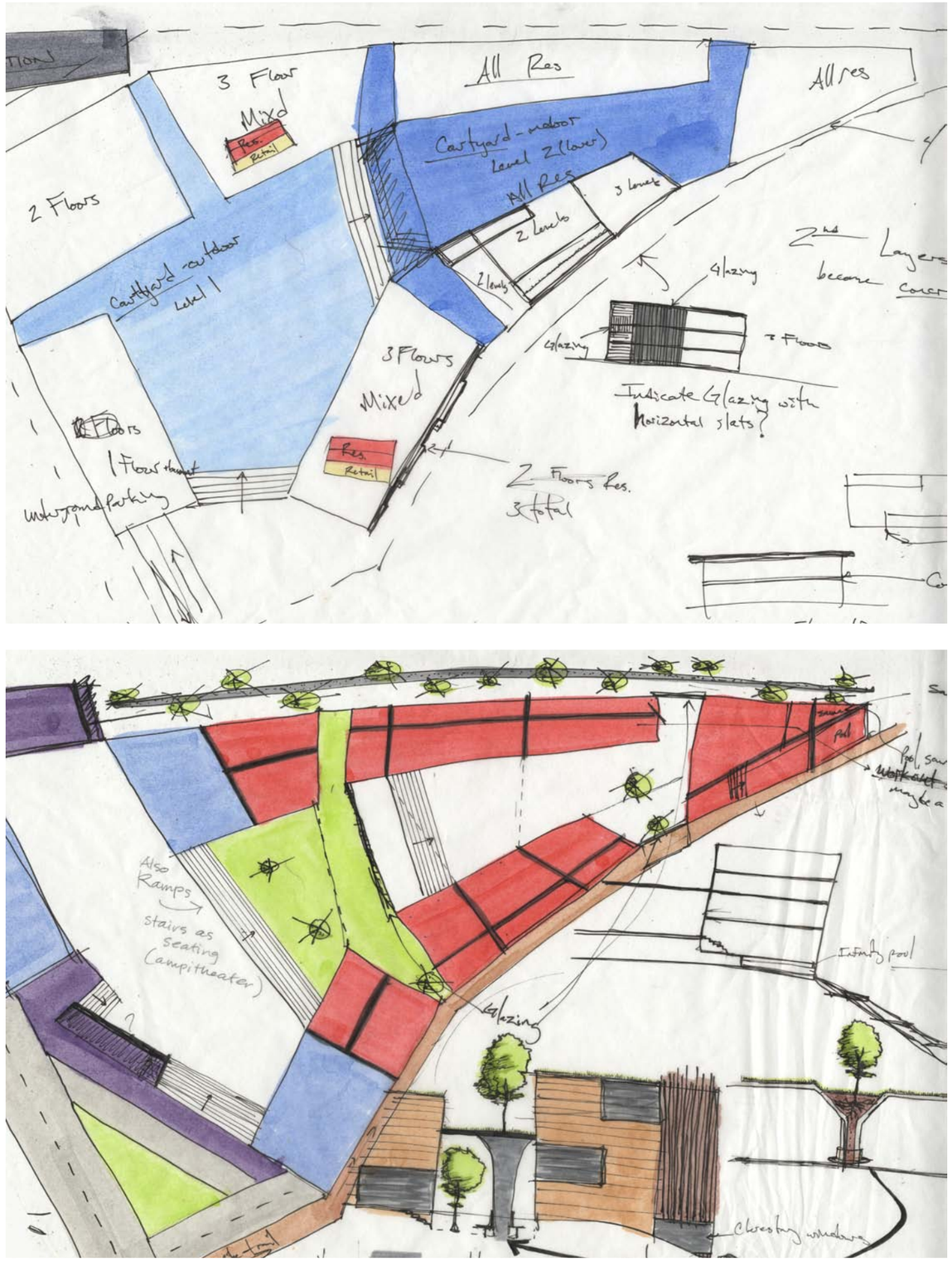









shared "yard"


All Res
3 Floor
Mixed
Res.
Retail
2 Floors
Courtyard - outdoor
Level 1
Courtyard - indoor
Level 2 (lower)
All Res
3 Levels
2 Levels
2 Levels
Glazing
Glazing
7 Floors
Indicate Glazing with
horizontal slats?
3 Floors
Mixed
Res
Retail
2 Floors Res.
3 total
1 Floor
Underground Parking
Also
Ramps
stairs as
seating
(ampitheater)
Infinity pool
Glazing

Mid-Terms

PROGRAM

DWELLINGS (A)

4 Bedroom (2 x 2,400 ft²).....	4,800 ft²
3 Bedroom (5 x 2,050 ft²).....	10,250 ft²
2 Bedroom (5 x 1,700 ft²).....	8,500 ft²
1 Bedroom (4 x 1,350 ft²).....	5,400 ft²
Studio (4 x 1,000 ft²).....	4,000 ft²
	32,950 ft²

RETAIL SPACE (B)

3 x 10,000 ft².....	30,000 ft²

GREEN SPACES (C)

Private (20 x 1,000 ft²).....	20,000 ft²
Semi-Private (4 x 10,000 ft²).....	40,000 ft²
	60,000 ft²

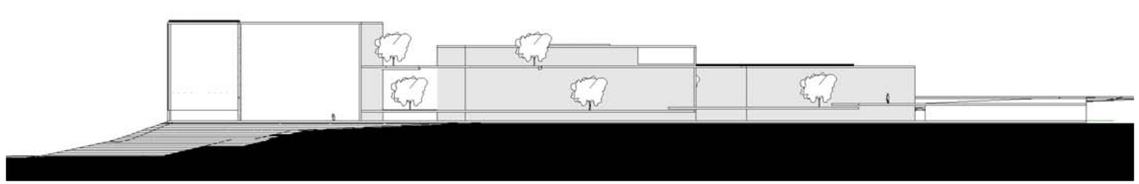
PARKING (D)

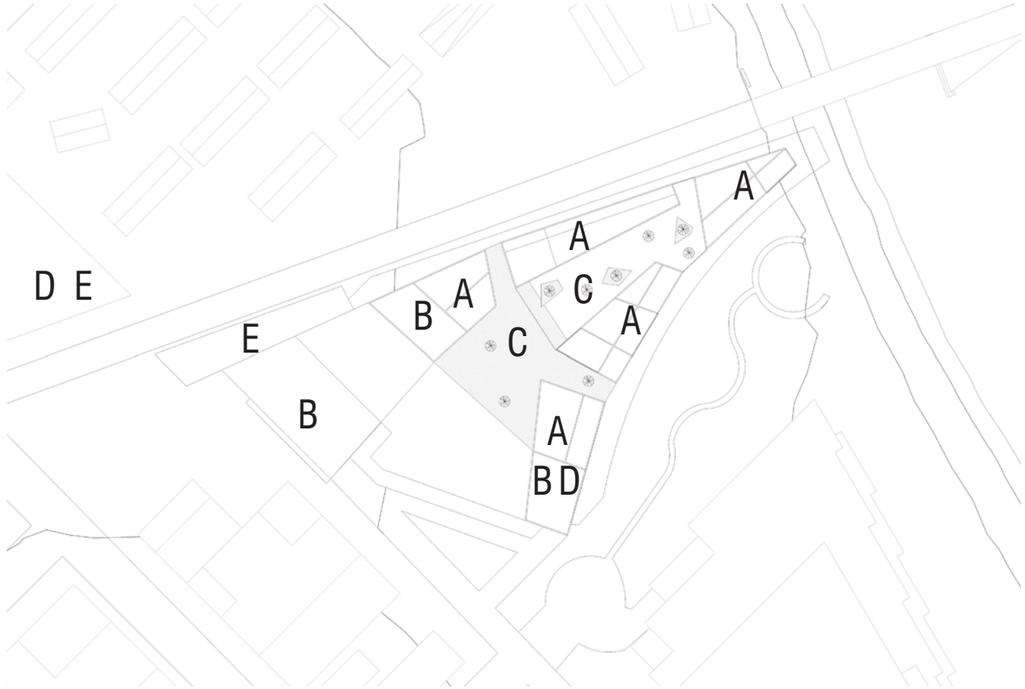
Private (20 x 200 ft²).....	4,000 ft²
1 x 20,000 ft².....	20,000 ft²
	24,000 ft²

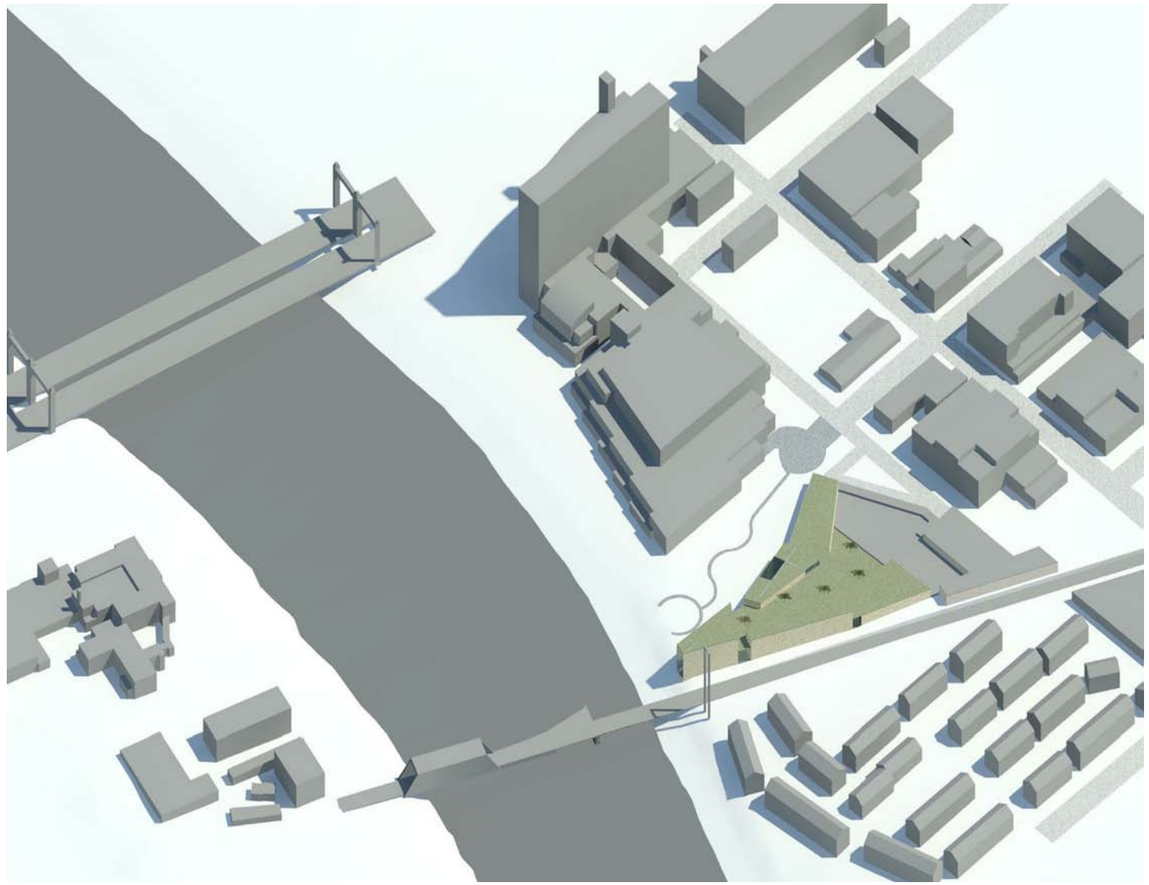
TRAIN TERMINAL (E)

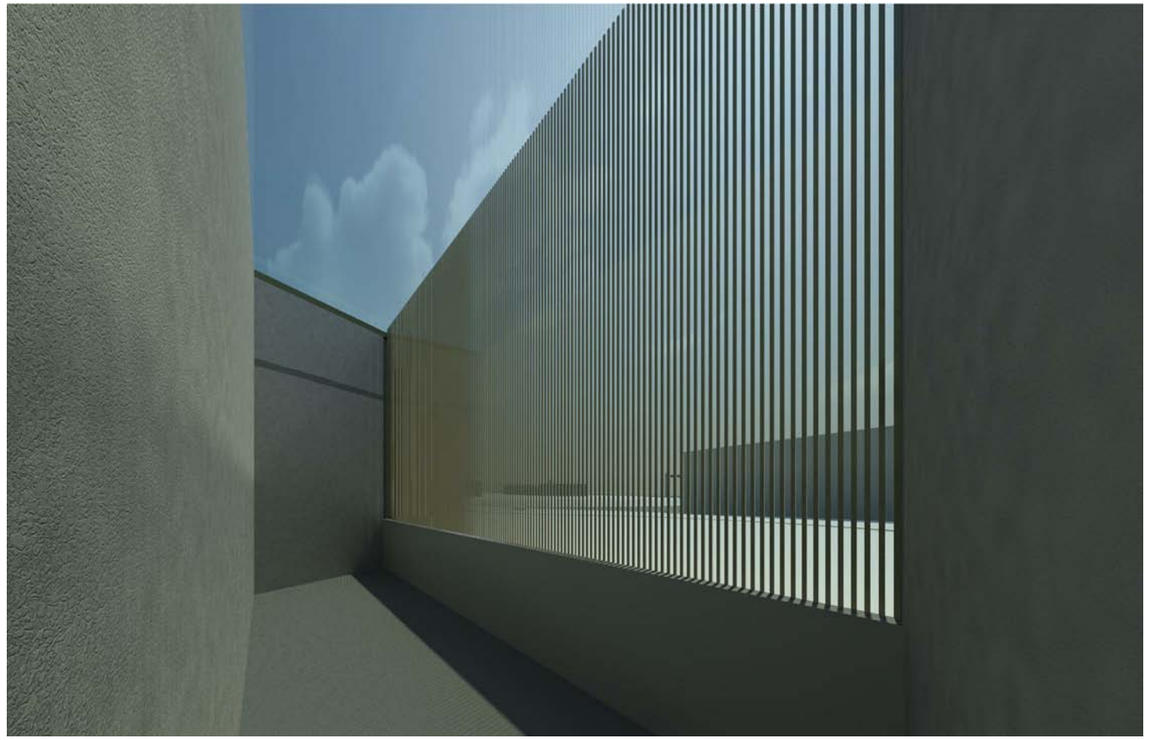
2 x 15,000 ft².....	30,000 ft²

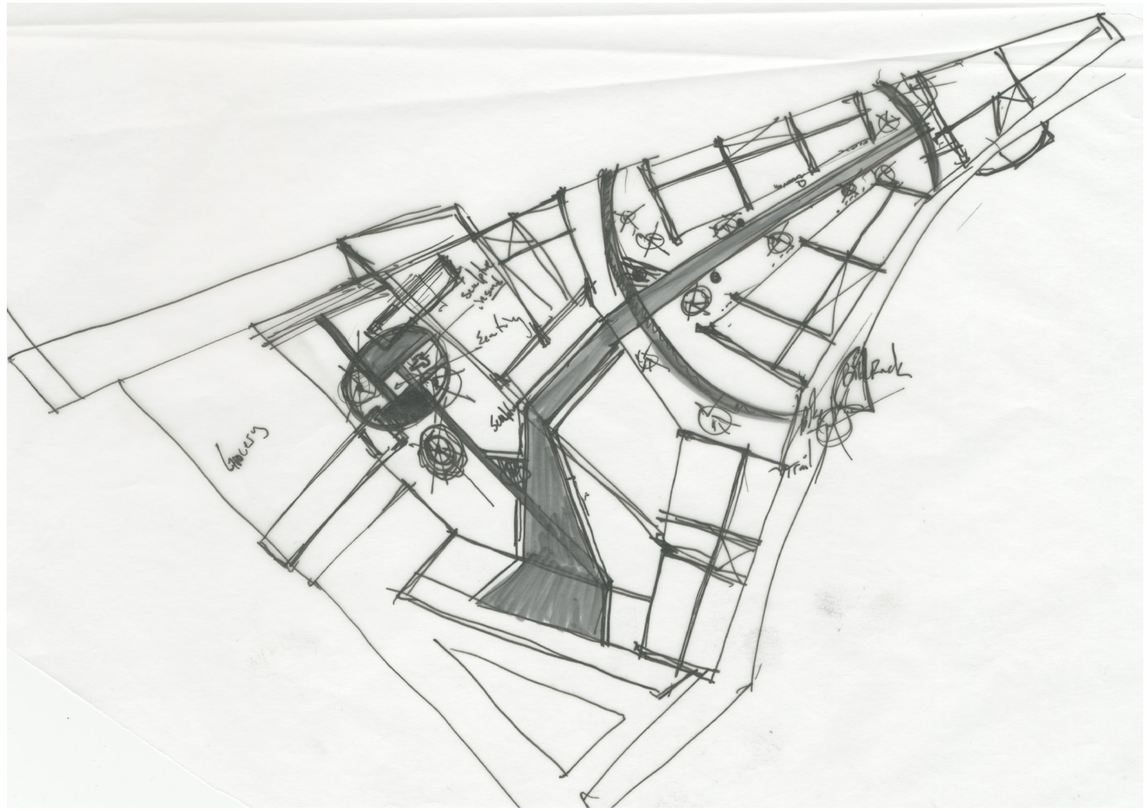
TOTAL..... 176,950 ft²

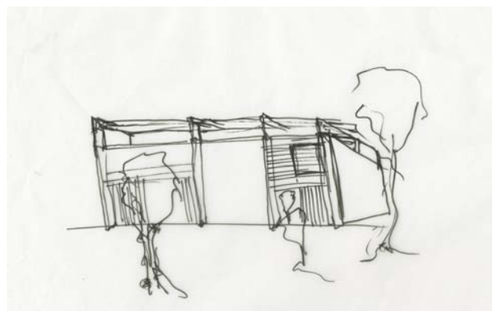


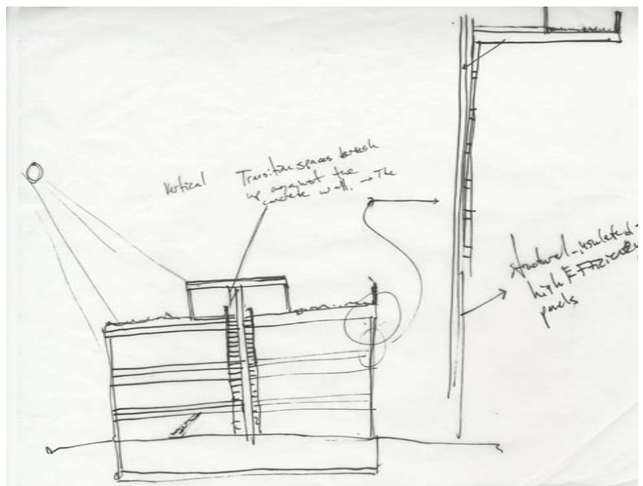


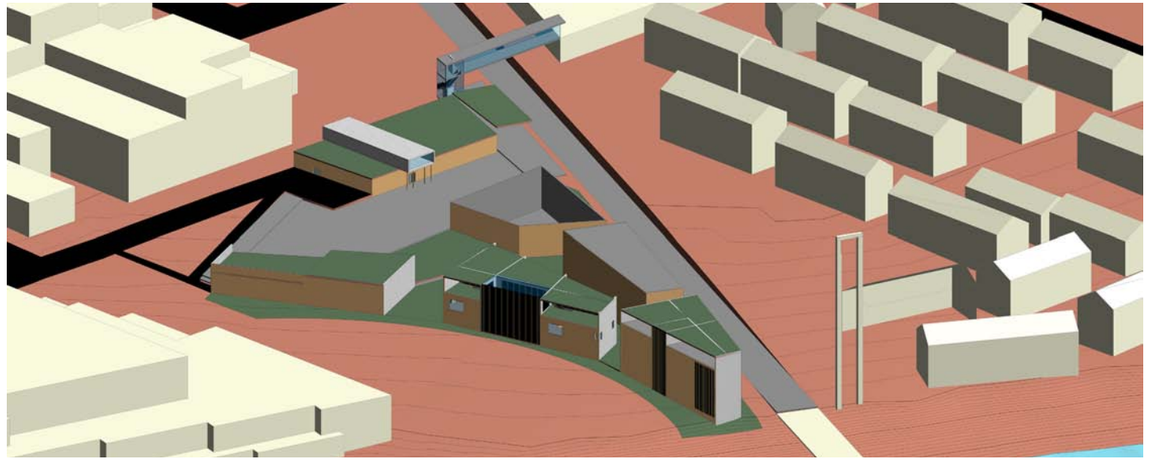


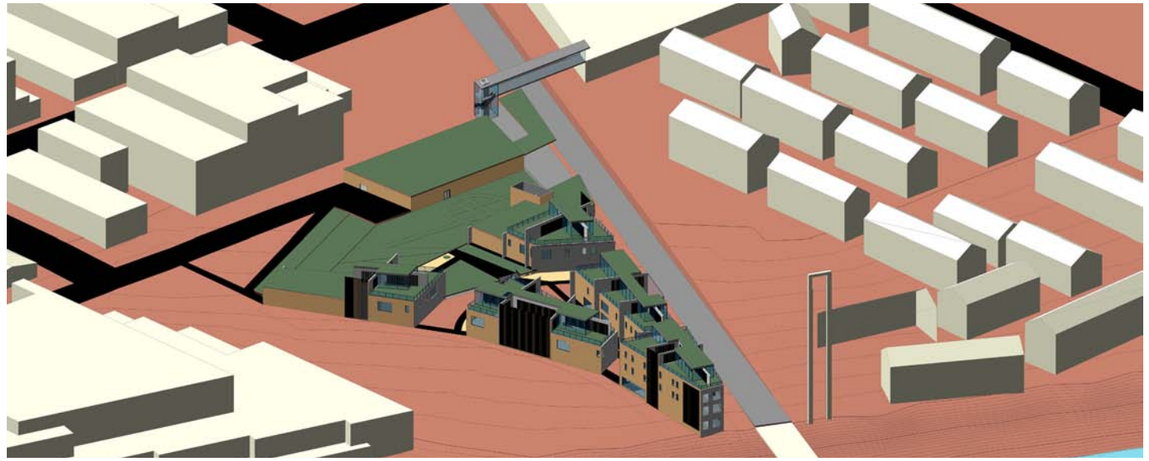


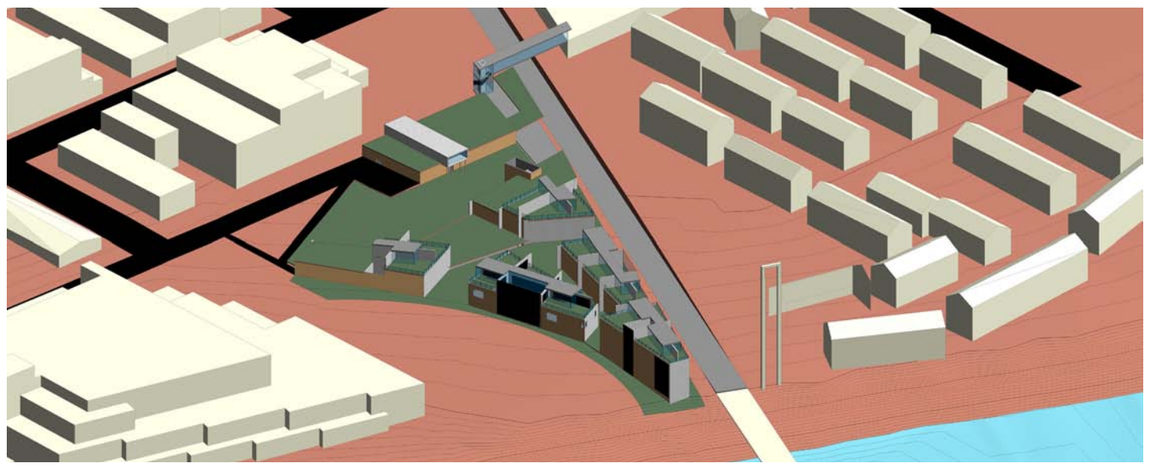





Vertical
Transition spaces between
the apartment and the
outside world. → The
Shaded, insulated
with F
panels







Final Design

PROGRAM

DWELLINGS (1)

4 Bedroom- A -(2 x 2,400 ft²).....	4,800 ft²
3 Bedroom- B -(5 x 2,050 ft²).....	10,250 ft²
2 Bedroom- C -(5 x 1,700 ft²).....	8,500 ft²
1 Bedroom- D -(4 x 1,350 ft²).....	5,400 ft²
Studio- E -(4 x >1,000 ft²).....	4,000 ft²
	32,950 ft²

RETAIL SPACE (2)

3 x 10,000 ft².....	30,000 ft²

GREEN SPACES (3)

Private (20 x 1,000 ft²).....	20,000 ft²
Public Park (1 x 40,000 ft²).....	40,000 ft²
	60,000 ft²

PARKING (4)

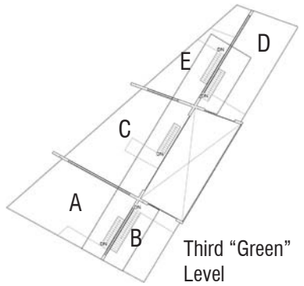
2 x 20,000 ft².....	40,000 ft²

TRAIN TERMINAL (5)

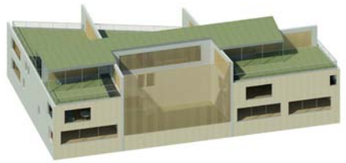
1 x 10,000 ft².....	10,000 ft²

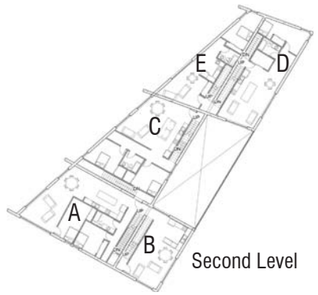
TOTAL..... 172,950 ft²

Sample Unit Breakdown: Unit Four

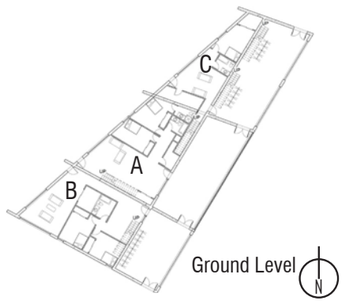


Third “Green” Level



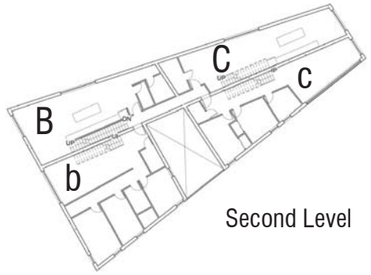


Second Level

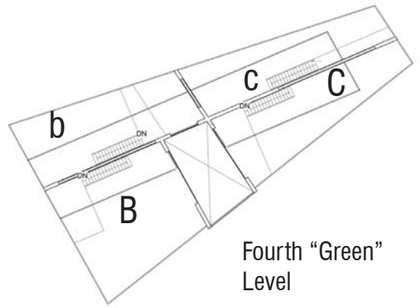


Ground Level

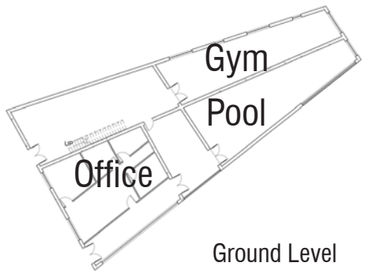
Sample Unit Floor Plans: Unit Three



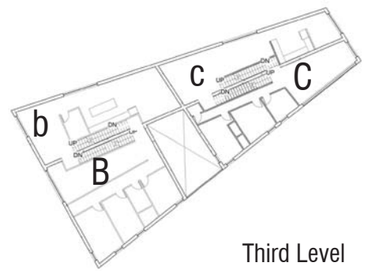
Second Level



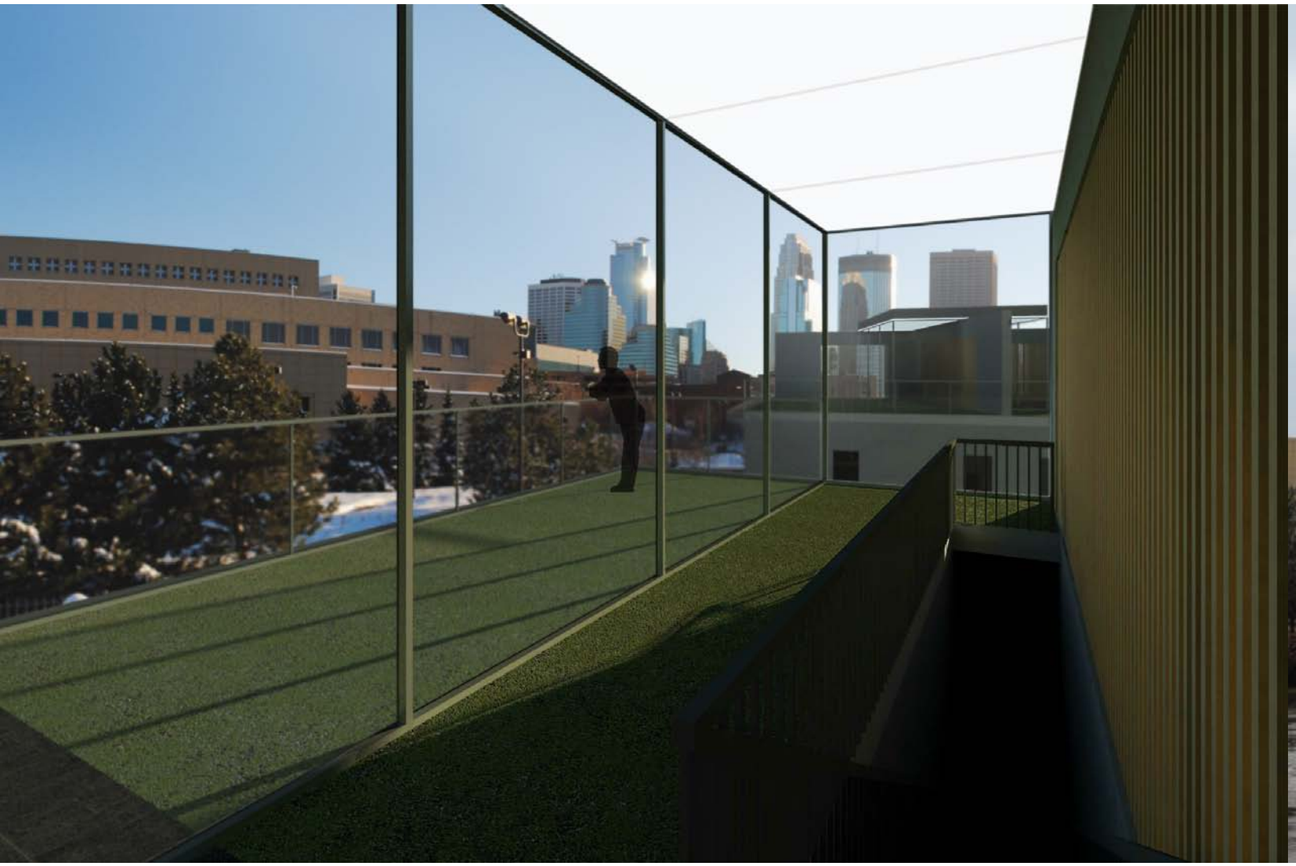
Fourth “Green” Level



Ground Level

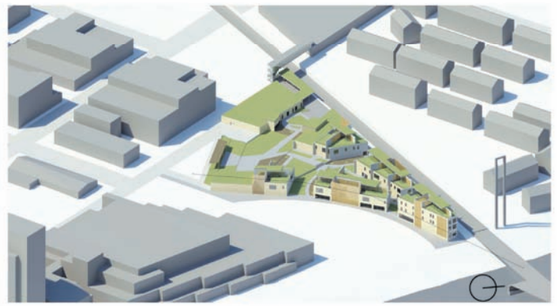


Third Level



subURBAN

redefining urban residential



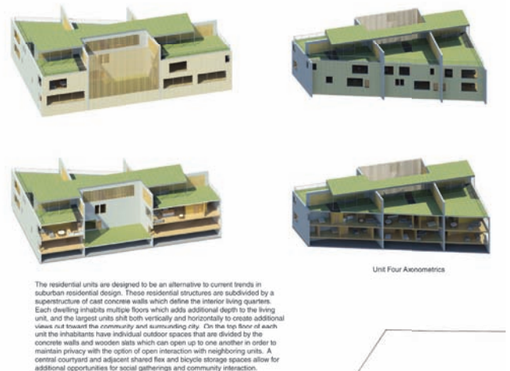
Suburban living offers a number of features which are viewed by many as a more desirable way of life for oneself and their family than residing in an urban neighborhood. Cheap and spacious houses are assembled in massive community developments which provide safe and private homes to families across America. But this lifestyle has become a detrimental yet growing way of life in the United States and around the world. These suburban communities are interconnected by roads and highway systems which are heavily reliant on fossil fuels and the automobile. Coupled with contemporary zoning ordinances which segregate the functions of the city, the majority of citizens are forced to rely on the automobile as the primary, and sometimes only, form of transportation. This has lead to a rise in health and environmental problems including obesity and pollution.

In order to mitigate the effects of suburban sprawl in the United States, new forms of living must be presented to the public in an attempt to strengthen the core of these greater metropolitan areas. Located in Minneapolis, Minnesota, this project focuses on one such development which embraces a new form of community living and residential architecture. Blending site functions such as a park, residential units, and retail and dining structures, spaces provide places for activity throughout the day. Alternative to automobile commuting is encouraged by the site itself by becoming a transit hub which connects to the local city bus system as well as the new 888 Northstar rail line which connects the city of Minneapolis to the northern suburbs and beyond.

Sample Unit:

Unit Four

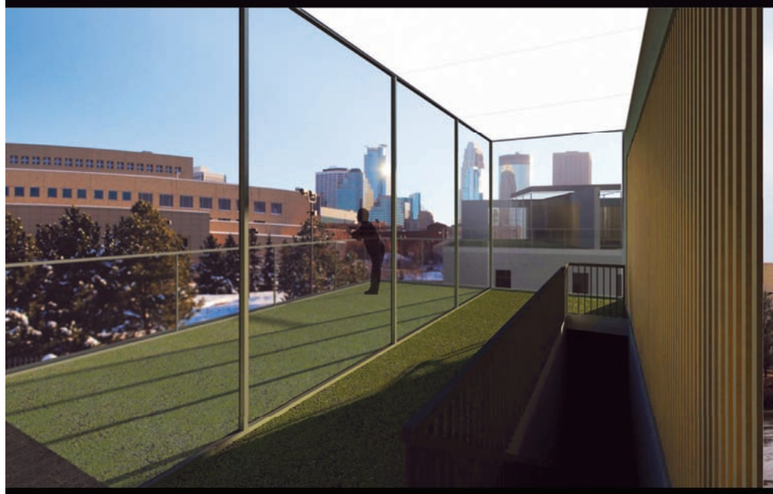
A - 4 Bedroom Dwelling
B - 3 Bedroom Dwelling
C - 2 Bedroom Dwelling
D - 1 Bedroom Dwelling
E - Efficiency Dwelling



Unit Four Axonometrics

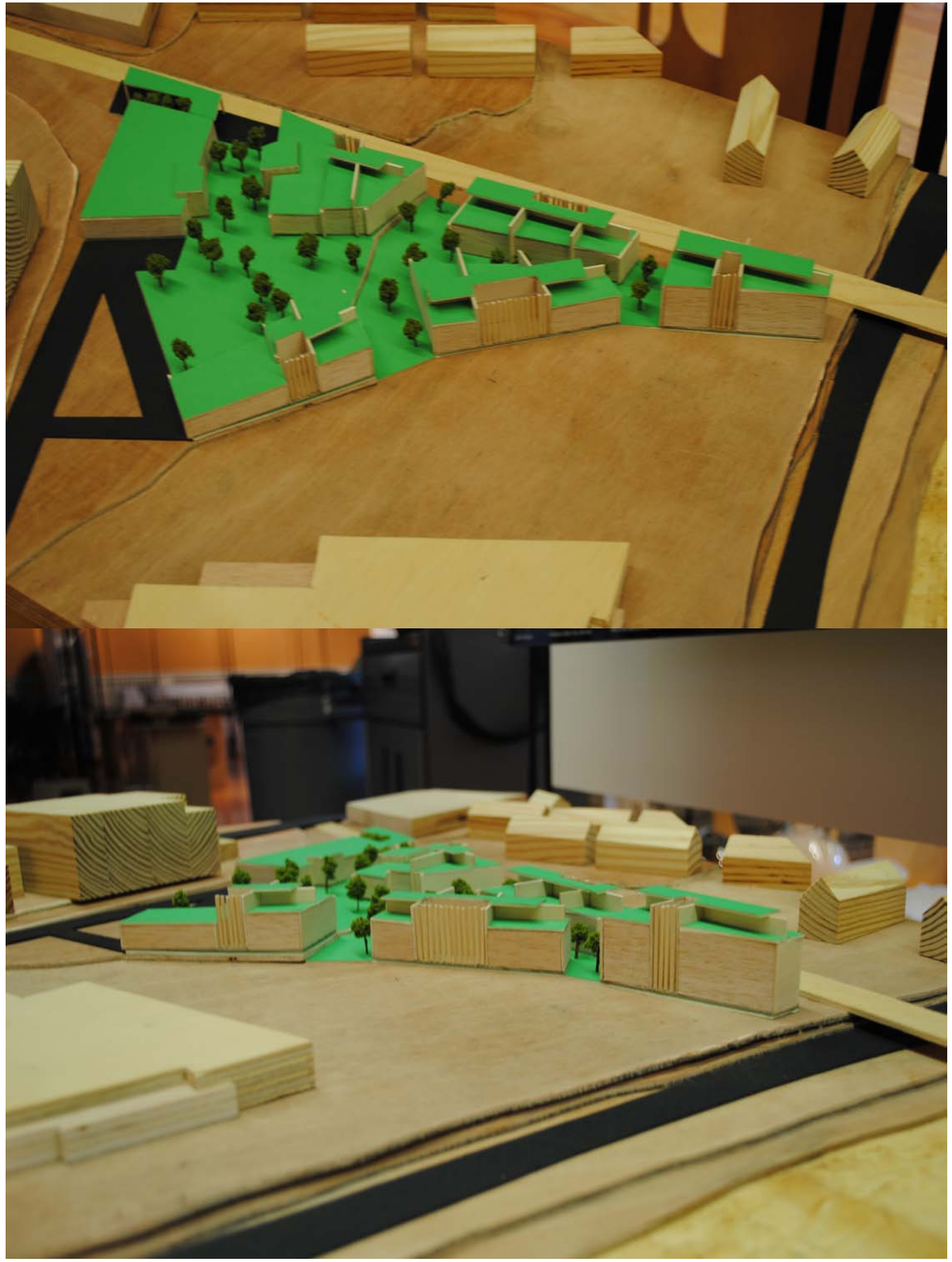
The residential units are designed to be an alternative to current trends in suburban residential design. These residential structures are subdivided by a superstructure of cast concrete walls which define the interior living quarters. Each dwelling inhabits multiple floors which adds additional depth to the living unit, and the largest units shift both vertically and horizontally to create additional views out toward the community and surrounding city. On the top floor of each unit the inhabitants have individual outdoor spaces that are divided by the concrete walls and wooden slats which can open up to one another in order to maintain privacy with the option of open interaction with neighboring units. A central courtyard and adjacent shared flex and bicycle storage spaces allow for additional opportunities for social gatherings and community interaction.

Plans & Section - 1"=16'



Steven Bugge Professor Bakr Aly Ahmed Revit Architecture 2011, Sketchup Pro 8, Adobe Photoshop CS3, Adobe InDesign CS3, Ink on Vellum


subURBAN
redefining urban residential



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651.295.8016

In my time spent at NDSU I have developed a deep respect and interest for design in all forms thanks to my professors and their variety of interests and talents, as well as their relentless determination to make each of us a better designer and person.

Tomamu Japan, outside Tado Ando's Church on the Water